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CITY GOVERNMENT

FEBRUARY, 1897.

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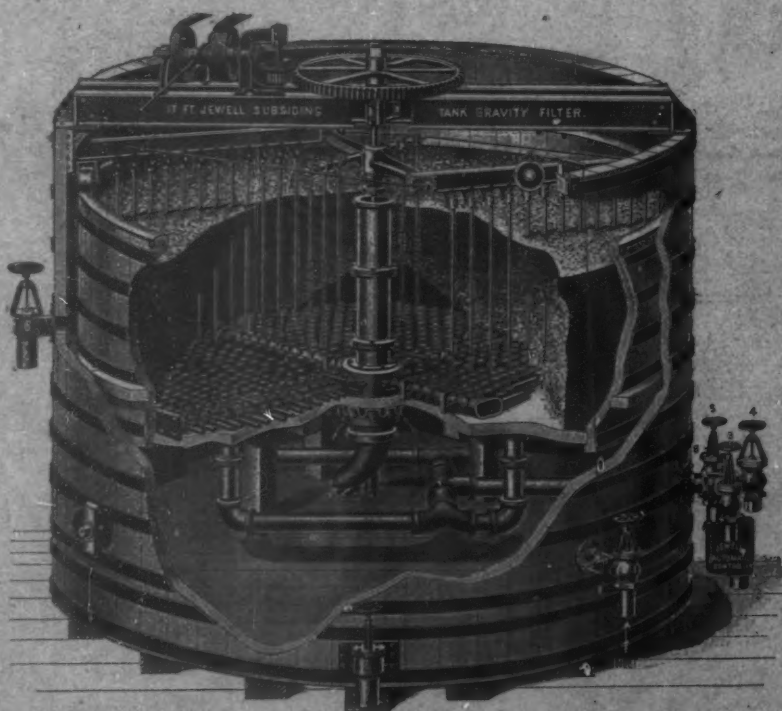
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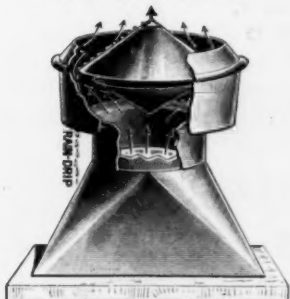
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used in road-making, the cost of road-building, suggestions as to different roads for different parts of the country, the cost of gravel roads, Macadam roads, etc. There are also appendixes giving the Massachusetts laws relating to state highways, laboratory experiments on road-building stones, table of contract prices on Massachusetts roads, and a list of all the important works on highway construction. The book is fully illustrated with pictures showing good roads and bad, and with plans and diagrams. It is handsomely printed and well bound, containing about 300 pages, and is sold at the low price of \$1.50

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CITY GOVERNMENT.

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\$3 A YEAR.

MAYOR PINGREE ON STREET RAILWAYS.

Hazen S. Pingree, mayor of Detroit and governor of Michigan, relentless as ever in his antagonism of street railway and lighting corporations and all else that tends to retard municipal progress and burden the taxpayer, has issued his eighth annual message to the city council. Mayor Pingree touches up the street railway companies like this :

"In my seventh annual message, in commenting on the street car situation I used the following language :

"The history of what has been called the street car war has demonstrated the fact that competition in the street car business is healthful and necessary. It produces good service and fair treatment. It prevents stagnation. Whatever favors are granted to the people will be returned by them fourfold."

"Since this was written one year ago events have transpired which have had a tendency to emphasize what was then said.

"The suit brought by the Citizens' Company against the Detroit Railway and the City of Detroit, by which the former claimed the exclusive right to operate cars in the streets of the city, had been decided in favor of the city by the circuit court. The case was appealed to the supreme court and the decision of the circuit court was affirmed. After the decision was rendered it was learned that before the case was argued in the supreme court the two companies had practically entered into an agreement of consolidation, the terms of which were kept secret.

This agreement was in direct violation of the constitution of this state, which prohibits the consolidation of parallel and competing lines of railway. The effect of this consolidation has been to cripple the service upon the Detroit Railway, where the lower fare is charged. Its power house has been closed and many men have been thrown out of employment; cars are crowded and the general public is compelled to suffer great inconvenience and discomfort.

"Permit me further to call your attention to the manner in which the holders of public franchises juggle with the people's rights. It has been estimated that the cost of the construction of the Detroit Railway is in round numbers \$1,500,000, and yet that company or its successor has placed a mortgage upon its property and issued bonds to the amount of \$2,800,000. Here is evidence of the creation, by the simple execution of a paper, of over \$1,000,000 worth of fictitious value which the people of Detroit are expected to pay. We thus have the example set us of the tyranny of corporate wealth, controlled

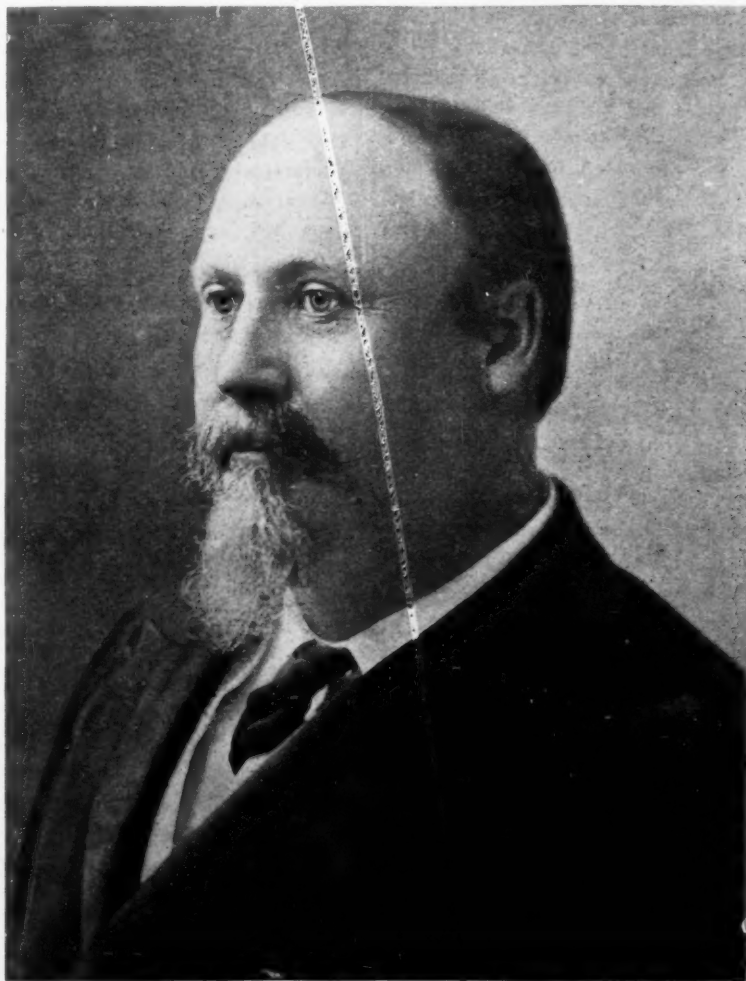
by those who claim to be financial and society leaders, which in times of depression and distress and business uncertainty have it in their power, by the supposed sanction of law, to obtain an advantage which no private enterprise or business can enjoy.

"The next step in this municipal comedy will be for the company, which has to pay interest upon \$2,800,000, to claim that the earnings of the road are not sufficient to pay its outstanding liabilities and operating expenses and profit to stock, and with mock solemnity it will appeal to the people's representatives to grant an extension of its franchise upon more favorable terms.

"If the concentration and consolidation process to which I have referred had stopped here it would not have been so bad, because there still existed a company which has heretofore been supposed to be free from entangling alliances, and this company was in a position to receive valuable

concessions had it desired to accept them; but within the past few weeks it, too, has entered the combination and become a party to the illegal contract.

"It may be that the Citizen's Company and the Fort Wayne Company, under the ordinances granted to them, cannot be compelled to sell more than six tickets for twenty-five cents, but I do not believe that such is the case. There must certainly exist the right and the power to fix rates of fare. But if this power does not exist, the people must submit to what everyone knows to be an extortion for some years to come; but the



57 HON. HAZEN S. PINGREE.

Detroit Railway still operates under a franchise which should be enforced, and it will be not only proper, but your duty to fix stringent rules for the running of cars upon its lines, so that the people who can reach them will have ample accommodation at the lower rates.

"When the three roads were operating as independent competing lines I understand a four-minute service was given upon some of the lines of the Detroit Railway, and as the result of the raise of fare on the Baker street and the Fort street branches of the consolidated monopoly will be to drive passengers to the Detroit Railway, I would urge upon you the necessity of requiring that company to furnish sufficient cars to accommodate those who desire to ride and not require them either to be driven to the higher-priced lines or to be unnecessarily crowded.

"In the original ordinance of December 4, 1894, of the Detroit Railway, the common council fortunately reserved the right to regulate the running of cars, and I trust the ordinance before you for that purpose will be so amended as to give the people of Detroit the fullest opportunity to enjoy the benefits of low fares.

"When those who combine for their own selfish ends against the people who furnish them the means of support are active and aggressive, and with secret schemes even go so far as to violate constitutions, the people's representatives should be equally active and aggressive and should not only demand, but enforce strict obedience to existing contracts.

"The question of whether an illegal consolidation has been made is a question which should be fully investigated. How far violators of constitutions and laws can go and be supported by the courts should be tested, and I know of no better time than the present and no better place than the State of Michigan to make such a contest.

"I recommend that an ordinance be adopted requiring a time card to be posted in a conspicuous place in each street car, showing the time when each car will pass certain given points, so that the citizens may know at what time they can be at the different crossings without being obliged to wait for a car.

"It has become a notorious fact that during many hours citizens desirous of taking passage on the various street car lines are obliged to remain standing. That suitable conveniences should be provided by the street car companies is so evident that no extended elaboration is required, and I recommend, in order to compel the performance of their duty to the public in this particular, that the companies be compelled to furnish a suitable number of cars and provide proper conveniences in this regard, and that an ordinance be provided that no passenger be obliged to pay fare who is not, during his passage, provided with a seat.

"No one should be deceived by any pretence that the street railways are desiring to establish a rate of fare known as 'six for a quarter.' The end of the struggle will be either a straight five cent fare or eight tickets for a quarter, for which we have so long contended.

"The New York syndicate, which now owns our street railways, through their representative, openly say that they are unalterably opposed to anything but a straight five cent cash fare. They will not take anything less longer than they are obliged to. They will be obliged to take less so long as we fight against it, and no longer."

—R. S. Thomas has been elected superintendent of schools at Akron, Ohio, to succeed Elias Traumpfelter, who has retired on account of ill-health. Prof. Thomas has been superintendent of the Warren public schools for six years and is an educator of excellent qualities.

BIDS FROM A GAS TRUST.

The city works department of Brooklyn has received the following bids for furnishing gas for street lamps, public buildings and private consumers from the Brooklyn Union Gas Light Company:

One year contract.—Street lamps, three-foot burners, \$18.25 per lamp per year; four-foot burners, \$22.90; five-foot burners, \$27.54; public buildings, \$1 per thousand cubic feet; private consumers, \$1.24 per thousand cubic feet.

Three year's contract.—Street lamps, three-foot burners, at \$18.25 for first year, gradually reducing to \$17.25 for third year; four-foot burners, \$22.90 for first year and \$21.90 for third year; five-foot burners, \$27.54 for first year and \$26.54 for third year; public buildings, \$1 per thousand for first year and 98 cents for third year; private consumers, \$1.23 for first year and \$1.19 for third year.

Five years contract.—Street lamps, three-foot burners, \$18 for first year, gradually reducing to \$16 for fifth year; four-foot burners, \$22.58 for first year and \$20.58 for fifth year; five-foot burners, \$27.16 for first year and \$25.16 for fifth year; public buildings, \$1 per thousand for first year and 90 cents for fifth year; private consumers, \$1.20 for first year and \$1 for fifth year.

Ten years contract.—Street lamps, three-foot burners, \$18 for first year and \$15.75 for tenth year; four-foot burners, \$22.58 for first year and \$20.33 for tenth year; five-foot burners, \$27.15 for first year and \$24.91 for tenth year; public buildings, 99 cents for first year and 90 cents for tenth year; private consumers, \$1.21 for first year and \$1 for tenth year.

These figures, compared with prices paid in other cities, are simply extortionate. It is folly to claim that it costs more to make and distribute gas in Brooklyn than it does anywhere else. The grasp of the Brooklyn gas trust, however, is quite firm, and it is very likely that the city will have to submit to its extortion. In view of the fact that public opinion, within a few years, will force even a gas trust down to reasonable prices, it is to be hoped that the city of Brooklyn will not make a long-term contract.

EMPLOYMENT OF PRISONERS.

Clarence M. Kemp, a well-known business man of Baltimore, recently published an article in the Baltimore Sun on the subject of giving employment to the convicts in the House of Correction. Mr. Kemp sets forth a number of reasons why the convicts should not be put to work on county roads and then suggests that they be employed making such goods as go into home consumption, shoes, clothing, brooms, furniture and the like, taking the raw materials of every sort and carrying the operations through to the delivery of the finished product, employing both male and female. Have these goods bear the full stamp of honesty—no paper-soled shoes or shoddy goods. Dispose of these goods in the community, and with the profit (the balance left after deducting the cost of the raw materials only from the returns) employ free, honest labor on the roads. Let there be a non-political registry kept of the unemployed men, applicants for work, of whom there are thousands travelling hopelessly about. By this means employment of the one class will make employment for the other, and as "idleness breeds crime," many now lacking employment are drifting into the criminal classes and into our penal institutions. The adoption of this plan should prove a salutary check to this tendency.

THE COST OF STREET LIGHTING.

UNREASONABLE INEQUALITY OF THE PRICES CHARGED FOR ILLUMINATING THE STREETS OF AMERICAN CITIES.

To fully realize the extent to which American municipalities are imposed upon one must necessarily investigate the subject of street lighting and its cost. Such an investigation will reveal facts that are absolutely inexplicable. While it must be conceded that the prices charged for artificial light should vary, in accordance with varying conditions, in different localities, there is almost nothing in these conditions to warrant the wild disparity of the prices actually paid for light by the cities of this country. As an instance, there is not a sufficient difference in the cost of producing and distributing gas in two portions of New York City to explain the difference between \$12 per lamp, per year, charged in one portion, and \$28 per lamp, per year, charged in another. It may be asserted that the company which receives \$28 for the lights in its district has no competition, while the company which is paid only \$12 for the lights in its district suffers from competition and that this difference in conditions accounts for the difference of the prices. Granting the truth of such an assertion, we find the municipality guilty of paying tribute to a monopoly, while a better course for it to pursue would be to break up the monopoly by building and operating its own gas plant. It may be asserted, also, that the company charging \$28 operates in a sparsely settled portion of the city, where the lights are few and far between, while the company charging \$12 has its lights close together. This difference in conditions, however, does not seem to warrant a difference of 133 per cent. in prices.

Another striking instance of unwarranted disparity is furnished by the figures paid for electric lights by New York and Newark, only a few miles distant. New York pays \$146 per arc lamp, per year, for 1,829 lamps, and Newark pays only \$98.55 per arc lamp, per year, for 1,563 lamps. The electrician who could give any good reason why New York should pay nearly 50 per cent. more for electric light than Newark pays would be a gentleman, a scholar, a scientist and a philosopher.

The figures in the following table furnish food for reflection on the part of those interested in street lighting.

CONTRACT PRICES FOR GAS LIGHTS, ALL-NIGHT SCHEDULE.

	Number of lamps.	Price per lamp per year.	Nominal candle-power.
Elizabeth.....	850	\$14.00	17
Louisville.....	88	17.47	18
Cleveland.....	5,731	17.65	19
Newark.....	1,978	19.00	16
Dayton.....	1,185	19.00	16
Washington.....	6,111	20.00	25
Sioux City.....	52	20.00	25
New York.....	26,229	*20.75	20
Erie.....	500	21.50	25
Milwaukee.....	2,780	22.00	23
New Haven.....	710	22.32	20
Brooklyn.....	13,835	†23.55	20
Omaha.....	1,131	25.00	22
Binghamton.....	71	27.37	20
Providence.....	613	32.00	20
Cambridge.....	295	32.90	18

*This is the average of eight prices, ranging from \$12 to \$28.

†This is the average of four prices, ranging from \$18.25 to \$28.

The sixteen cities enumerated above are selected at random and serve as a fair and reasonable illustration of the inequality that exists in the street lighting prices paid by cities throughout this country. The table shows the nominal candle-power of the gas lights furnished, but these figures are unimportant for the reason that in only one case out of about ten will a street gas lamp show the power that is claimed for it by the corporation furnishing it. So many of our cities are paying for 25-candle-power gas lamps and getting about 16-candle-power, that the question of power need not be seriously considered in a comparison of prices.

Gas company officials claim that an important factor in lessening the cost of gas is a heavy demand; that the cost of producing and distributing grows smaller as the consumption both for public and private lights increases in volume. This is doubtless true, but why is it that Elizabeth, N. J., with only 850 street lamps, pays \$14.00 per lamp per year, while Brooklyn, with 13,835 street lights, pays an average price of \$23.55? Is it because the consumption by private users in Elizabeth is so much greater than it is in the great city of Brooklyn? Is it because the lights of Brooklyn are not as thickly located as those of Elizabeth? Is it because coal is so much cheaper in Elizabeth than it is in Brooklyn? Or is it because the darkness is so dense in Brooklyn that illumination is more difficult there than in Elizabeth?

Note the figures from Providence and New Haven, a couple of cities so close together that the cost of coal and other local conditions must be nearly alike. Providence pays about 45 per cent. more for street gas lamps than New Haven pays. New Haven uses about 100 more street lights than her neighbor uses, but the consumption of gas in Providence, for both public and private purposes, is doubtless greater than it is in New Haven.

Louisville uses only 88 gas lamps and gets them at \$17.47 each, while Erie, Pa., uses 500 and pays \$21.50 for each.

Gas company officials claim that prices for gas should vary according to the variance of local conditions, but the established truth of this claim fails to justify the extravagant differences shown by the figures in the above table. In many cities where the local conditions—price of coal, cost of distribution and labor and consumption—are favorable to low prices, the rates charged are the highest. The truth of the matter is that gas manufacturers, being human, very naturally take all they can get for their product. The price of gas is quite generally regulated by the power of the manufacturers to practice extortion. In most cities there is no competition in the gas business and the power to fleece the public is limited only by the force of public opinion. Municipalities have granted gas companies exclusive franchises, and, in paying exorbitant prices for the illumination of their streets, they place a premium on the very monopolies they have created. In many instances it is almost impossible to break up these

monopolies; even the granting of franchises to new companies will not achieve the desired result.

In 1895, the president of the St. Paul Gas Light Company told the gas committee of the council of that city that one reason they should not grant a franchise to a new gas company was because experience in this country had shown that invariably the new companies are absorbed by the old concerns and competition is thus avoided. This frank admission was evidently accepted in good faith by the St. Paul committee, for they voted to refuse the new company a franchise.

The best solution of the gas problem is for municipalities to build and operate their own plants wherever the charges of private corporations are exorbitant. Despite the stories circulated by gas company officials, municipal ownership of gas plants in this country has been fairly successful. Philadelphia's plant, although mismanaged by a political ring until recently, has been profitable. An article in CITY GOVERNMENT for October, 1896, on "Philadelphia's Gas Plant," shows conclusively that the institution has been a source of profit not only for the city, but for private gas consumers. It is the existence of this plant that made "dollar gas" a reality in Philadelphia. An analysis of the receipts and expenditures of the Philadelphia gas bureau for ten years prior to 1894, under the rates of \$1.60 and \$1.50 per 1,000 feet, placed the gross profits of the city from the operation of the plant at 20 per cent. The profits to the city under "dollar gas" during 1895 approximated 10 per cent. The municipal plant at Wheeling, W. Va., is another example of successful public ownership.

For the purpose of showing that the prices charged for electric and naphtha lights are just as inequitable as the gas rates, these tables are appended:

CONTRACT PRICES FOR ELECTRIC LIGHTS, 2,000-C. P., ALL-NIGHT SCHEDULE.

Cities.	Number of lamps.	Price per lamp per year.
St. Louis.....	2,519	\$74.95
Louisville.....	1,207	84.00
Indianapolis.....	1,000	85.00
Chattanooga.....	196	87.50
Syracuse.....	941	91.25
Scranton.....	525	91.25
Nashville.....	326	91.25
Erie.....	285	91.25
Columbus.....	950	92.75
Cleveland.....	462	94.80
Peoria.....	410	98.00
Newark.....	1,563	98.55
Binghamton.....	297	98.55
Dayton.....	280	100.00
Portland, Or.....	648	103.50
Grand Rapids.....	395	107.00
Worcester.....	453	120.45
Utica.....	450	124.10
Des Moines.....	288	126.00
Baltimore.....	1,278	127.75
Buffalo.....	2,012	127.75
Providence.....	1,800	127.75
Omaha.....	209	140.00
New York.....	*1,829	146.00

* This is the number of lights paid for at the rate of 40 cents a night, or \$146 a year. There are 1,104 lights, for which the city pays 45 and 50 cents each, a night.

CONTRACT PRICES FOR NAPHTHA LIGHTS, ALL-NIGHT SCHEDULE.

Cities.	Number of lamps.	Price per lamp per year.	Nominal candle-power.
Baltimore.....	897	\$12.07	25
Columbus.....	430	15.23	16
Milwaukee.....	986	16.08	16
Omaha.....	557	17.00	16
Cleveland.....	4,670	*17.95	12
Washington.....	1,074	20.00	18
New Haven.....	501	22.25	20
Providence.....	1,346	22.50	24
Binghamton.....	186	23.72	16

* Under the 1896 contract, now expired.

BRICK PAVEMENT SPECIFICATIONS.

New specifications for vitrified brick pavement have been formulated at Portland, Or., as follows: The brick must be vitrified throughout, of even texture and uniform color, and have rounded edges. When the bricks are placed in a foundry rattler thirty inches in diameter, running at a speed of twenty-four revolutions per minute, with 250 pounds of small foundry scrap, and run 4,000 revolutions, the loss by abrasion must not exceed 12 per cent. When the bricks are broken and placed in water seventy-two hours they must not absorb more than 2 per cent. of water. In the testing of specimens a variation of 10 per cent. will be allowed, but the average of tests must not be below the above requirements. The brick shall be straight, smooth and free from checks or fine cracks, and shall be 8 inches long, $3\frac{1}{8}$ inches wide and $2\frac{1}{2}$ inches thick, and must not vary more than 2 per cent. from the above dimensions. No brick shall be accepted which contains lime or other soluble substance in sufficient quantities to cause spawling or pitting of the surface when soaked in water for three consecutive days and exposed to the air a like time.

BROOKLYN'S POLICE TELEGRAPH.

F. C. Mason, superintendent of police telegraph of Brooklyn, has submitted his annual report to Superintendent of Police McKelvey. The report shows that 210,030 messages were handled by the operators at headquarters during the year. The force consists of one superintendent, one chief operator, seven operators and four linemen. There are in use at present 353 police patrol signal boxes and 440 telephones connected with the police telephone system. The department also has in use 569 miles of wire, 350 of which is strung on poles belonging to the department, and 219 of which is strung on the elevated roads, in conduits and under ground. Twenty precincts now have the patrol-box system and all of the electrical equipment of the department is of the latest and most approved kind, working in a perfectly satisfactory way. Mr. Mason recommends that all police wires be placed under ground. Police Commissioner Welles and Superintendent McKelvey have expressed their appreciation of Mr. Mason's excellent work, stating that the telegraph bureau very satisfactorily meets the exacting demands made upon it.

CHICAGO ANNUAL REPORTS.

Mayor Swift, of Chicago, is well satisfied with the showing made by the various departments of the city government during the past year. A saving of money and an improved condition were displayed in almost every department. We publish below extracts from several of the department reports recently submitted to Mayor Swift.

WATER DEPARTMENT.

The total pumpage for the year is 93,616,332,166 gallons, an increase of 1,694,799,437 gallons over 1895. The average daily pumpage was 255,782,328 gallons, or 127.8 gallons per capita a day, assuming the population of the city to be 2,000,000.

The total cost of pumping amounts to \$465,068, as compared with \$535,630 in 1895, a saving to the city of \$70,562, without considering the increased pumpage. The cost of pumping 1,000,000 gallons one foot high is 4 $\frac{1}{2}$ cents, or 3 $\frac{1}{2}$ cents less than in 1895.

The various tunnels, intakes and cribs are all in good condition. No interruption of the flow has occurred during the year. The expense of operation and maintenance of these parts of the water supply system was as follows: Lake View cribs, \$8,544; two-mile crib (Chicago avenue), \$11,639; four-mile crib, \$8,818; Sixty-sixth street crib, \$8,442; total, \$37,645.

The eight pumps at the canal pumping station have pumped from the Chicago River into the Illinois and Michigan canal during the year 26,104,930,080 cubic feet of water, at a total cost of operation and maintenance of \$67,316, which is an increase in pumpage of 145,074,072 cubic feet and a reduction in cost of \$11,035 compared with the year 1895.

At the Fullerton avenue pumping station 3,935,415,127 cubic feet of water was pumped into the North branch of the Chicago river during the year at a total cost of \$12,964, which, compared with 1895, shows an increase in pumpage of 634,695,861 cubic feet and a reduction in cost of \$4,090.

There has been laid during the year 1896 424,263 feet mains of the following sizes:

4,914 feet.....4-in. pipe.	150 feet.....16-in. pipe.
286,802 feet.....6-in. pipe.	1,988 feet.....24-in. pipe.
114,287 feet.....8-in. pipe.	266 feet.....36-in. pipe.
15,856 feet.....12-in. pipe.	

One hundred and ninety-one thousand, two hundred and thirty-one feet were laid on revenue deposit and circulation, 233,032 feet on contract by special assessment.

The total number of miles of water pipe in use December 31, 1896, was 1,692 miles and 3,807 feet. During the year 725 double hydrants were placed, 374 single hydrants and three 4-inch hydrants. The total number

of hydrants in use December 31, 1896, was 173,921.

During the year there were placed a total of 683 valves. The total number of valves in use December 31, 1896, was 12,956.

IMPORTANT PUBLIC WORKS.

The Diversey avenue bridge was opened for traffic on January 11, 1896. The entire cost was \$31,345.

The Wells street bridge has been entirely remodeled at the expense of the Northwestern Elevated Railroad company, whose trains will cross on the upper deck, which has been added.

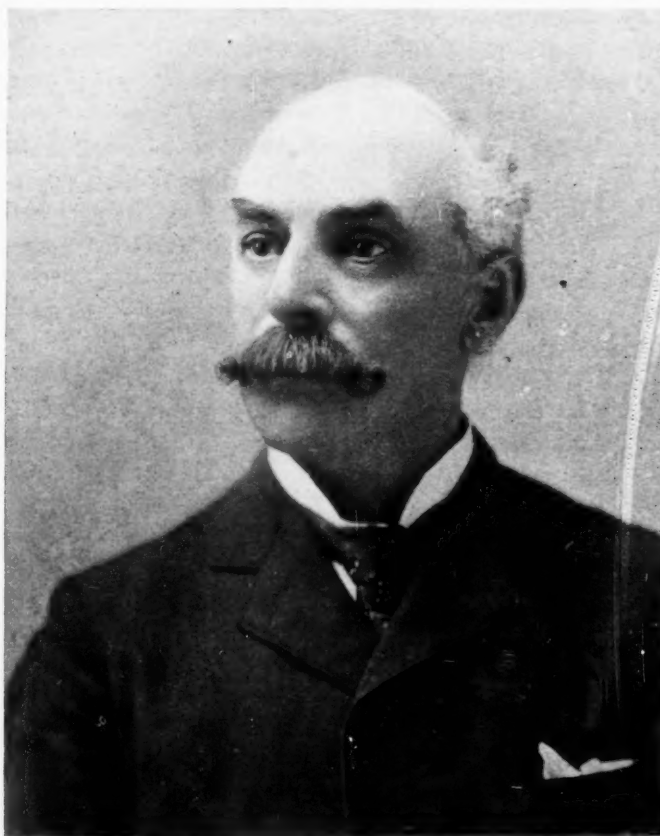
The South Halsted street viaduct has been built. The entire cost was \$83,394, all of which was borne by the railroad and street railway companies.

A North Halsted street bridge of the rolling bascule type, similar to the Van Buren street bridge, is being built. The entire cost will be about \$114,000, of which the North Chicago Street Railway Company pays 25 per cent. The bridge will be opened for traffic this week.

The cost of maintenance of sixty-one bridges and forty-three viaducts for 1896 was \$129,717; for 1895, \$148,936. Bridge tenders' salaries for 1895 were \$100,080; for 1896, \$88,415; a total saving of \$30,884.

The cost to the city of maintaining the harbor of Chicago for 1896 was \$42,395.

The Lake Shore and Michigan Southern and the Chi-



GEORGE B. SWIFT, MAYOR OF CHICAGO.

I have, with much interest, studied the articles appearing from time to time in "CITY GOVERNMENT" in which municipal affairs are discussed, and have gleaned much that has been beneficial to me in meeting and solving civil problems.—GEO. B. SWIFT.

cago, Rock Island and Pacific railroad companies jointly began elevating on an ordinance passed March 9, 1894, on territory south of Forty-fifth street and extending to Fifty-ninth street, constructing subways at Forty-seventh street, Fifty-first street, Fifty-third street, Fifty-fifth street boulevard, Fifty-seventh street, Cloud court, and Fifty-ninth street, elevating six tracks.

The Chicago and Northwestern Railroad Company worked upon an ordinance passed March 9, 1896, covering track elevation of four and two-tenths miles on the Milwaukee division, from Clybourn Junction to Rosehill, and four and five tenth miles on the Wisconsin division, from Clybourn Junction to Mayfair.

On the Milwaukee division the Chicago and Northwestern Railway Company elevated three tracks and its yard at Diversey avenue, covering a territory of about two and one-half miles, from Diversey avenue to Berteau avenue, where there were constructed thirteen subways. There remains a distance of about one and three-quarter miles to be elevated and six more subways to be constructed to complete the work on this division of the Chicago and Northwestern Railroad, in accordance with ordinance.

The report of the bureau of street and alley cleaning shows that the total appropriation for the year was \$651,000. The total cost of street cleaning was \$265,636; removing dead animals cost \$37,500; pay of ward inspectors amounted to \$33,972; office salaries were \$9,499; the cost of removing garbage was \$312,573; cash collected from dumps amounted to \$6,263; from street permits, \$14,656. The bureau shows that the difference between \$672,420, appropriated to defray expenses for the year, and \$662,181 expended is \$10,238, credited to the snow account.

During the year 2,448 $\frac{1}{2}$ lineal miles of streets were cleaned at an expense of \$8.40 a mile; 10,837 $\frac{2}{3}$ lineal miles at \$12.50 a mile; 2,360 $\frac{1}{3}$ lineal miles at \$2.50 (work done at day-time in First District); 209 $\frac{1}{3}$ lineal miles of alleys \$6.80 a mile (first district); 312 $\frac{1}{3}$ lineal miles of bridges, viaducts and approaches at \$6.80 a lineal mile, making a total of \$165,276.

Since November 12, 1896, 1,107 lineal miles of streets were cleaned by hand, cost of which amounted to \$12,047, or an average of \$10.88 a mile.

The unimproved alleys were cleaned during the year at a cost of \$10,051.

HEALTH DEPARTMENT.

Commissioner W. R. Kerr, in his annual report for the health department, says:

Chicago is again to be congratulated upon its unrivalled healthfulness. Even based upon the minimum population figures of the school census as announced July 1, 1896—namely, 1,619,226—the death rate is lower than that of any other city of first magnitude in the civilized world.

Up to noon of December 31 Dr. Hackard, the register of vital statistics, had recorded 23,247 deaths during the year, with a probability that the corrected total may reach 23,270 for 1896. This gives an annual rate of 14.37 per thousand of the school census population.

One of the most important regular lines of work is that connected with the regulation of the milk traffic, by

which it is believed Chicago has now the best and most wholesome milk supply of any large city in the country. Out of 24,898 samples collected and examined during 1896, only 1,345, or about five and a half in the hundred, were found below standard grade, and 1,119 suits were prosecuted against the vendors of this impure milk.

Dr. Gehrmann, the director of the laboratory, and City Chemist Kennicott, furnish the following additional details:

In January and February an extended examination was made of localities from which the ice crop for 1896 was being cut. This necessitated visiting fifty-six localities in Illinois, Wisconsin and Indiana, from which 126 samples of water were procured and analyzed. Such waters as it was necessary to condemn were from rivers or lakes near towns. Analyses of ice collected from dealers prior to June 13 showed 65.4 per cent. of samples not to be in accord with the requirements of the ordinance. Subsequent to June 13 the percentage of samples not of required quality is 19.4 per cent., those showing serious contamination being 5.8 per cent. of the entire number analyzed.

The special bacteriologic work has been the diagnosis of suspected cases of diphtheria. Some 3,000 outfits for obtaining diagnosis specimens were distributed, and 1,815 were returned for examination. Of these, 46 per cent. was found to be true diphtheria.

Other medical diagnosis examinations include 119 examinations for suspected typhoid fever, thirty-four examined for tuberculosis, and thirty-six other bacterial examinations for the medical inspectors. The typhoid fever diagnosis method was introduced early in November and promises to be of great value to physicians in assisting to an early recognition of this disease.

During the year the inspection of meat was placed under the direction of the laboratory, and about 1,000,000 pounds of meat of various kinds have been condemned by the inspectors and disposed of in rendering tanks.

A total of 1,468 analyses for determining the sanitary quality of the city water supply were made. These samples include the daily chemic and bacteriologic analysis of samples from the four intakes and other samples from city taps. Special series of analyses have been made to show the distance to which contaminated water will extend into the lake under different conditions, and 107 samples were taken from the city tug at various points in the lake during the summer months. Another series of samples from the Chicago river was made to determine changes in the degree of pollution. A series of analyses of water from schools supplied from wells was made for the board of education during February and March, and an extended investigation of filter equipments was also made for the board of education.

At the beginning of the current school year eight of our ten regular medical inspectors were assigned to school inspection service. When the holiday vacation began these had made 355 inspections of the 233 public schools; had reported to the board of education gross insanitary conditions in forty-six; had investigated and taken precautionary action in 1,730 cases of diphtheria, scarlet fever, measles and other contagious diseases among the scholars

and had visited over 1,600 homes of sick children.

Eighty-seven parochial and a small number of private schools were also inspected. Only about 80 per cent. of the parochial and private scholars were found properly vaccinated, while 93 per cent. of the public school scholars are thus protected against smallpox.

Much study and attention have been given by the commissioner to the subject of garbage disposal. The difficulty lies in the legislation, which prohibits the municipal authorities from making contracts for more than a single year. The first step to the final settlement of the garbage question is an act of the general assembly empowering cities to make contracts for this purpose for a longer period, say of five years. This act should be secured at the earliest possible date.

The present system—or no system—of garbage disposal in Chicago is a nuisance to the present and a serious menace to the future. The rotting animal and vegetable matter is dumped into clay holes and other excavations, covered with a few inches of earth or ashes and then built upon. Such areas can be clearly defined by their excessive sickness and death rates. The subject is a serious one and must be dealt with radically if Chicago is to maintain its present reputation for healthfulness.

PUBLIC LIBRARY.

The Chicago public library contains at the present time 219,275 volumes and about 42,000 unbound pamphlets. The accessions of books during the last year have been fewer than during any previous year in the history of the institution. This is chiefly owing to the fact that the present quarters of the library in the City Hall are crowded to their utmost capacity. In no department is the library as situated at present able to meet the demands made upon it or keep pace with the growth of the city. Notwithstanding these unfavorable conditions the use of books and periodicals is larger than in any similar institution in the world.

The aggregate circulation in all departments of the library during last year was 2,542,244. The home circulation was 1,173,586 volumes, of which more than one-half was issued through the thirty-two free delivery stations operated by the library. The attendance in the reference and reading-rooms at the main library was 738,841 readers, who consulted 991,031 books and periodicals. At the six branch reading-rooms 126,668 books and 250,309 periodicals were issued to 293,513 readers. The number of persons now holding cards which entitle them to draw books for home use is 52,746. There are 116 persons employed in the library service and the entire expense of maintaining the institution last year was \$142,902.

The library board is looking forward to the early completion of the new library building. The final contracts, covering furniture and ventilating machinery, will be let in a few days. All contractors are being urged to complete the work under their charge as rapidly as possible, and it is hoped the building will be ready for occupancy by June next.

CHIEF BADENOC'S DEPARTMENT.

The arrests made by the police department and the fines imposed by justices are shown by months as follows:

Months.	Arrests.	Fines.
January	6,509	\$24,835
February	5,599	19,020
March	6,421	18,505
April	7,859	19,588
May	8,403	25,714
June	9,234	30,693
July	9,576	33,652
August	10,115	27,221
September	9,507	30,278
October	7,572	22,063
November	7,243	24,370
December	6,984	27,405
	95,022	\$303,344

The number of men in the police department on Dec. 31, 1896, was 2,669, including 2,401 first-class men and 268 probationary men, 202 more than a year ago.

The appropriation for the year was \$3,352,810, and the amount on hand now is \$70,000.

BUREAU OF SEWERS.

G. L. Clausen, superintendent of the bureau of sewers, gives the following as an approximate amount of new sewers constructed, the cost of same, and the cost and maintenance of the sewage system during the year 1896:

	Cost.
57 miles main sewers constructed, size 1 ft. to 9 ft. in diameter, including 2,177 catch basins built. . .	\$719,279.89
34 miles house drains constructed.	26,454.13
Cleaning sewers and catch basins.	94,376.92
Raising manholes and catch basins to grade on streets being improved.	44,652.33
Repairs of sewers and catch basins.	32,692.48
Maintenance of pumping stations.	38,683.72
Appropriated salaries.	24,465.59
Total.	\$980,605.06

TWO GOOD ORDINANCES.

Another ordinance passed by the Milwaukee common council is intended to keep out transient merchants. It was framed, of course, in the interest of the retail business men of the city, who charged that their business was being injured by men who came to the city for a few days to conduct "fire" and "bargain" sales. The new ordinance provides for the payment of \$20 a day into the city treasury by both of these transitory dealers. Under the old system they had to pay to the state a license fee of \$50, and to the city a license fee of \$75, for six months. In addition, if they sold goods at auction, they had to take out an auctioneer's license at a cost of \$75.

An ordinance which works well in Milwaukee regulates the bakeries and confectioneries of the city. It makes it a misdemeanor for anybody to keep an unclean bakery or confectionery and gives the health department full power to enter all such places and make a thorough inspection. Recently one baker who allowed thick dough to form and remain on the sides and bottoms of his kneading troughs, and who piled up bread on the dirty floor, some of it near a closet, had to pay a fine and costs amounting to \$31.64.

NECESSITY OF MUNICIPAL OWNERSHIP.

BY EDWARD M. GROUT, OF BROOKLYN.

For Americans, brought up to believe that government best which governs least, it is not easy to consent to an extension of governmental functions. The protection of the community from force and fraud we recognize without question as a necessary field of government, requiring the maintenance of army and navy, of courts, the police and of officers of law. But there is another well-agreed field (to follow further the analysis of John Stuart Mill) in the exercise of certain powers, for the simple reason that thus the general convenience is best served; wherefore the national government regulates the coinage and weights and measures, improves harbors, builds lighthouses and conducts the post-office; the state government maintains the canals and educates the young, and the city governments pave, light and clean the streets, create parks, establish libraries and museums and supply water.

That municipal ownership and management of gas and electric lighting plants and street transportation systems may be sufficiently sustained in principle as aptly a part of the functions of municipal government, upon the ground that they conduce to the general convenience of citizens, I entertain no doubt; and shall endeavor to demonstrate to you later by instancing the results of such municipal ownership and management in the experience of a multitude of cities. But I am persuaded, also, that we have reached a point in municipal history in this country at which it is wise to consider whether such municipal ownership has not also become necessary, if the people are to be protected from force and fraud.

Force need not be physical. It may be the compulsion put upon the community by ill-advised laws and by systems and methods under such laws, which the community itself has blindly and ignorantly permitted. Fraud may not alone be direct cheating. It may be a most adroit cunning with which law has not yet attempted to cope. The old-time force, against which government by the people successfully erected itself, pretty well disappeared with the destruction of robber barons and of the feudal system, with the disappearance of armored knights and men-at-arms. Civilization triumphed over the middle ages, and order is now fairly well established in the world, at least where Caucasians rule. But if a new system has arisen under which, within the pale of our laws, without physical force, by mere adroitness and cunning, and by corruption, the common people are still oppressed and robbed, it then comes within the necessary functions of government to protect the people from this newer development of force and fraud. Such a situation is presented when the common right in the streets is appropriated by any corporation to its own profit without adequate compensation to the people; and when the public is daily overtaxed for its absolutely necessary use of its own thoroughfares—five cents for a ride in street cars when four or possibly even three would be ample; \$1.25 per thousand for gas when 75 cents would be sufficient—little things they may seem when mentioned thus, but an enormous aggregate for one year, for two years, for five

years, for a million or three millions of people. And then, if no other complete remedy can be found, municipal ownership of street franchises becomes a necessary and is no longer merely an optional and convenient function of government.

We are dealing with only those corporate rights and franchises which exist solely because the corporations have acquired the use of the public streets. Let that be remembered, lest we be accused of unreasoning attacks upon corporations generally. And it would be equally untrue to assail our proposition as socialistic, for not only is it within the bounds of the constitution and of the laws of this state, but the essence of the doctrine of socialism is the abolition of all individual competition, while, in the case of these street franchises, individual competition does not and cannot exist in any ordinary or proper sense. What has been called such competition will be found always to be imperfect and temporary, and to result almost invariably in a loss of capital and revenues which is afterward recouped from the public by a merging of the rival companies into an absolute and open monopoly. It is for this reason that these are sometimes termed natural monopolies. Perhaps the best possible illustration of this could be found here in Brooklyn, in the history of our gas lighting. Two years ago there were seven companies; today they are all combined into one, and the only one in the city. Competition is thus absolutely destroyed. Yet when there were fewer than seven gas companies, new ones secured their rights under the plea that they would compete with the others.

It is true that before this monopoly was attained as the ultimate and, doubtless, inevitable result, there were various gas "wars." It is true, also, that a gas "war," like a war in railroad rates, is competition; but it is something more, for it is destructive, not healthful, competition. If but one gas company be necessary to supply this city—if monopoly were bound to come, then the additional capital which was employed in maintaining seven separate works when one, two or three would suffice, and seven sets of officers when only one was needed, and in laying two or more mains through a street when one main would have very well supplied that street, all that capital was wasted and destroyed, which might have been put to profitable use. And when, for brief and infrequent periods, the companies forsook the maximum price which the law allowed and sought to rival each other in low prices, how quickly came some agreement and a restoration of prices to the utmost lawful penny. People everywhere recognized that this was no ordinary competition such as exists between merchants or manufacturers, for the common tongue called this a gas "war." All knew that its purpose was to destroy or to coerce rivals, and eventually to destroy all competition. Brooklyn's experience with gas companies has been the same as that of Boston, of Baltimore, of Chicago; the same as that now developing in New York. Clearly, the supply of gas is naturally and inevitably a monopoly, and the ultimate end of all attempts at competition between private gas companies must be this of consolidation into one company. The situation is the same in electric lighting. Once we had three electric

light companies in this city. Two have consolidated already. The remaining companies do not compete, for they have established an agreed schedule of prices. When the city calls for bids it gets two bids, but one price. Our experience in this field also is a duplication of the experience of other cities. Once, also, we had a dozen street surface railroad companies; now there are but four. They do not really compete to any great extent, for to only a small degree does one touch precisely the same territory as another. And negotiations are on foot each year to further consolidate these lines, just as there is now talk of consolidating the two lines of elevated roads. If any of these railroad companies were actually competing with the others they would not all be charging the maximum fare allowed by law. And here, again, in street railroads, Brooklyn's experience is that of Boston, of Chicago, of Baltimore, of Philadelphia and of New York.

The sooner we concede the truth, that these street franchises are naturally and inevitably monopolies; the sooner we cease to cultivate in this field of street franchises an unnatural and destructive competition, the easier and the better will we be able to reach an intelligent solution of the matter. For, when once the inevitable truth is conceded, then it follows that something must be done. A true monopoly cannot be left free to work its own will, unrestricted by law. If competition does not regulate, then the law must. There must be some governmental act, and there is no possible choice except between two things, strict governmental supervision and regulation of the monopoly, or its destruction by transformation into municipal ownership and management. In an uncertain fashion it has long been recognized in the laws of this state that these street franchises have a great value for which the people should be compensated, and that gas and street railroad companies are in truth monopolies, whose charges can not be fixed by competition and would be unregulated unless the law intervene. But there has been no intelligent attempt at any complete supervision and regulation by law, and the partial attempts have altogether failed.

Let us take one of these companies from its inception, and follow out its history. We shall thus observe the points of difficulty in the present system, and learn the impossibility of curing those difficulties by any remedy other than municipal ownership.

A company is organized to build a railroad or to supply gas or electricity, and, in its efforts to get the use of the public streets, there comes the first public evil of the present system, the bribery, corruption or undue influencing of aldermen and other public officials, or, at the least, the waste of public property by the aldermen and other public officials giving it away, for undisclosed reasons, for less than it is worth, for less than could be had for it. A few men have been convicted and jailed for this thing. Parties have been turned out of power because of it. In some cases the fraud and the stealing have been frustrated. More often the corruption has been suspected and charged, but not proved; nor yet denied nor made the basis of libel suits, for if the accuser does not seek the test of the courts, it rarely happens

that the accused will do so. Scarcely a franchise grant in this city, within my recollection, has been free from some such odor. A gas contract is now pending here, and one newspaper has uttered plain suspicions of bribery, while surely it would be hard to find defence for some of the official action upon this contract. The last railroad grant in this city was upset by one judge as fraudulent and wasteful, and upheld by the learned Appellate Court, because, forsooth, the legislative capacity of a board of aldermen was too high for judicial review, notwithstanding the fraud and waste, to effect which that legislative capacity was prostituted. The last railroad grant before that was likewise upset for the same reasons, but the Appellate Court, possibly less learned than its successor, sustained that decision. Next before that was the grant of the right to use electric motor power, for which the city got nothing, but which one New York paper openly charged cost, nevertheless, a large price. When one elevated railroad was built 24,000 shares of its stock were held by one man in trust for "widows and orphans," but the ownership of that stock and the consideration for it have never been explained. On another occasion nineteen aldermen made a grant to an elevated road in defiance of an injunction of the court, and went to jail for thirty days for their contempt. Yet the franchise was not void for that reason, but had to be defeated on other grounds. In New York, following the Broadway railroad steal of 1884, the law took a partial vengeance, yet many escaped punishment of whose guilt there was no doubt. Scarcely a large city in the country but has had some experience of this sort. Boards of aldermen are not always corrupt, officers of private corporations are not always willing to bribe, but the inevitable conflict of public and private interests which attends the obtaining of private rights in public streets causes a constant danger of corruption, and private interests usually triumph. There is no remedy for this evil except municipal ownership. That removes the private interests. It removes the bribe-giver, so that there is no one of whom the bribe-taker can ask. Under municipal ownership, therefore, there can no longer be such corruption. Gas franchises and railroad franchises will then afford no more opportunity for corruption than do the department of parks, the management of the water supply, the street cleaning, or the collection of taxes. Grant that there may be some stealing in such departments of the city, but it is as small, compared with what we have suffered in the giving out of street franchises, as a part is to the whole. The whole water franchise has not yet been stolen from us, but whole gas franchises and whole railroad franchises have been taken, and taken by a single act.

When a gas or street railroad company is organized, it fixes its own capitalization at what it pleases, and makes it as large as it thinks the stock market will stand. Then it issues it all, stocks and bonds, to some construction company for building the road. The construction company and the railroad company are usually composed of the same persons. They sell the bonds, build the road for the proceeds of the bonds, or perhaps a half of such proceeds, and then divide up the balance, and the entire capital stock as profit. That is the modern way. Then,

when we talk of the price of gas or of railroad fares, the company says that it can't stand a reduction and continue to pay interest upon its bonds and dividends upon its stock, and demands that capital be protected. With the older companies the same bloating of securities is attained in another way. Take a company organized thirty years or more ago. It started with probably a small capital. After a few years it needed a new plant and issued new stock and bonds for it. By repeating this process it heaps up as, for instance, the Brooklyn City Railroad Company has today, \$12,000,000 of stock and \$7,000,000 of bonds, a total capitalization of \$19,000,000. But that railroad company shows sworn visible assets (outside of the franchise which is not by law, or justly capable of capitalization) amounting to only \$8,000,000. What does the other \$11,000,000 represent, assuming that it was all paid for, dollar for dollar, at some time during this company's fifty years' existence. Used up, utterly consumed capital, worn out stages, discarded cars, dead horses, rails which were long ago sold for old iron, in large part are shown there; part of it, doubtless, represents what was paid to buy out the franchises of connecting and competing lines. But in large part, it represents something which is no more entitled to be called existing capital and to demand interest and dividends from the public than you are entitled to include in a list of your personal assets of today the toys and the clothes of your babyhood. Yet let anyone ask that the fares on this railroad be reduced, and the company will protest that it must pay, not only the poor wages of its men, but five per cent. on its bonds and ten per cent. on its capital stock, and that if it cannot, it will be robbed by the law. Why, I doubt not that we shall hear the Brooklyn gas trust this winter resisting a reduction in the price of gas because it must pay interest on \$15,000,000 of bonds and dividends on \$15,000,000 of stock. Yet at least one-half of that capitalization is pure water, and does not represent real capital nor genuine assets. That gas trust simply took over the assets of the seven old companies and issued for them just double the amount of paper which was formerly outstanding. Thus, in one way or another, these companies all manage to keep alive consumed capital and to capitalize the value of their street franchises, and no law has ever yet prevented them. No law could be devised which would do it effectually and without a hundred fold increase of bribery and corruption; nor could such a law be passed except by defeating corruption, which would be so desperate that it would be open. Nothing can effectually meet this difficulty concerning the capitalization of these corporations, and compel them to keep capital stock down to the level of actual present investment, as do manufacturers and merchants, except competition or public ownership, and there is no competition.

When it comes to the question of the regulation of rates, precisely the same difficulties confront us. Every legislative attempt at reduction of charges brings out in force the lobby, the third house, the black horse cavalry of Albany. Nothing much will ever be done in this direction. There has never yet been, there will be no effectual effort to make any intelligent, consistent and mutually fair schedule of charges. Whatever has been done

heretofore has been arbitrary and unreasoning. The five-cent fare is not based upon any ascertainment of cost of operating and of actual capital now invested and in present use. It is based, if upon any reckoning at all, upon all the capital which the railroad companies ever have used, even though they have used it up, and upon all the water which they have been able, contrary to law, to inject into their capital. The same is true of gas. The price was once arbitrarily fixed at \$1.50. Then it was arbitrarily fixed at \$1.25. Now it is proposed to fix it arbitrarily again at \$1, or else to do as the gas companies wish and make an arbitrary reduction of five cents per year until \$1 is arbitrarily reached. Any such process is bound to be unfair to one side or the other. And of what avail is the regulation of the price of gas unless the pressure and the quality are also regulated? Certainly the companies have not suffered hitherto in the price of fares or of gas, and it is very much to be feared that, so long as this arbitrary method continues, no regulation by law will have any result which will deprive these corporations of the advantage which they have always had over the public.

The relations between these private corporations and their employees must also be considered. Brooklynites will not easily overlook that item, for Brooklyn has suffered more than once, and once she suffered terribly. An incipient dispute between railroad company and men induced Glasgow to begin managing her own street car lines, and she has found it possible to increase wages, reduce hours and cut fares in half. Brooklyn, in the face of such a dispute, has had to stop business for a fortnight and to pay 10,000 soldiers and additional police. The cost of that strike of 1895 has not yet been fully computed. We have a ten-hour labor law in this state, but it is not enforceable against these railroad companies, who will employ no one except by a contract, which nullifies the law, under which the men work ten hours, it is true, but ten hours distributed over fourteen or more of the day. We need not take time to magnify this phase of private ownership of street franchises. It closely concerns the peace of the whole community and the ability of a large portion of the community to earn a decent and sufficient living; and these things mean more to the city than rates and prices, more than dividends on watered or consumed capital, and at least as much as does official corruption. Yet public regulation has shown itself thus far utterly inefficient to prevent or even lessen the evils to the community which result from the ever-recurring struggle between these corporations and their employees. Let me add one single fact for consideration under this head—more than one-third of the riots and disturbances to public order which, during the last ten years in these United States, have necessitated the calling out of troops, have been labor riots. Municipal ownership would completely change this condition. The city, as it does with its police, its firemen, its school teachers, and all its clerks and employees, would treat the men employed on its gas works and railroads more humanely with respect to both hours and pay; and, as it will appear when we come to consider the experience of other cities with municipal ownership, the city could afford so to do. Under

municipal ownership we might expect railroad strikes as often as the police, the firemen and the school teachers strike.

There remains one other feature of the present system—that of the financial returns to the community; and as the art of taxation, or rather of reducing taxation, is the secret of successful government, it is of the utmost importance that the public should realize all that these franchises are fairly worth. The problem now is to catch these most expert tax dodgers. Municipal ownership alone will catch them. But the dodging of annual taxes and car license fees is a little thing compared with the enormous franchise values which are given away, at a stroke, for little or nothing. No one man is in possession, probably, of sufficient data to adequately estimate the value of such gifts which have been made in the past within the Greater New York. One may take the quoted market value of street railroad and gas stocks—stock often issued originally for capital now long since used up, or else issued for pure water—and by subtracting from these market values the ascertained values of actual, visible assets, may reach a figure fairly representative of franchise value. For if stock is found to have a market price when that stock does not stand for any discoverable, tangible and now existing assets, then it can stand only for what might in some businesses be termed goodwill, and which, in the case of these corporations, means the right to use the public streets, and that is the franchise. I have once made and published such a reckoning, which, though I was unable to include in it some of the most valuable street franchises, such as the elevated roads, the electric lighting companies and some of the great traction systems, yet showed a sum aggregating \$70,000,000, or nearly one-half the debts of New York and Brooklyn; and those figures have not been refuted. Five per cent. on this sum would represent an income of \$3,500,000 per year, and the two cities do not in fact receive \$500,000 annually from these franchises. These corporations thus get from the public something which is worth to them a clear \$3,000,000 a year, and get it without return. But this is stating only what is ascertainable by a casual outside observer, and it cannot be doubted that a full estimate of the value of all the street franchises in the Greater New York would show much larger values. The \$70,000,000, gross, or the \$3,000,000 per annum, will serve us as an illustration, at least, or as a glimpse into an unexplored field.

Now, it is not to be denied that the law has remotely looked at this situation, and has made some effort, apparently, to remedy it; that is, it was provided for a while that in New York and Brooklyn new franchises should be sold at auction to the highest bidder; but that law is now limited to New York alone, while the rest of the great state is scot-free of all such restriction. But even thus a sale in perpetuity is permitted, and not a sale for a limited period. The essence of the situation is that franchises constantly grow in value with the growth of the city. So far, then, all regulation by law of this question has utterly failed. The new charter makers propose a step in advance, and in the right direction, by limiting the period of such grants to fifty years. But even with

that scheme full compensation will not accrue to the public, at least not until the third generation hence; for the private corporation which buys the fifty-year grant will not bid its full value, but must reserve something for its own profit. And this scheme omits all consideration of the value of franchises already taken. Those can be dealt with only by severe taxation or by condemnation for the public use. Municipal ownership will be found to be the only possible way by which the people can reserve to themselves, and retake for themselves, the whole value of street franchises.

STREET PAVING IN UTICA.

The following table is from advance sheets of my annual report, which will be issued soon.

LIST OF PAVEMENTS IN USE IN UTICA, JAN. 1, 1897.

	Asphalt.		Sandstone.		Cobble, and other.	
	Sq. Yds.	Miles.	Sq. Yds.	Miles.	Sq. Yds.	Miles.
Laid previous to Jan. 1, 1894....	165,655	8.565	105,600	5.382	165,000	11.700
Laid in 1894.....	83,774	4.259	799	0.045		
Laid in 1895.....	54,415	3.363	7,243	0.360		
Laid in 1896.....	41,157	2.315	21,834	0.490		
Deduct paving replaced	345,001	18.502	135,476	6.277	165,000	11.700
Total existing pavements....	345,001	18.502	20,580	0.549	73,383	3.484

Total cost of pavements laid in 1896.....\$146,186.77
 Total cost of sandstone pavements, 1896..... 51,676.13
 Total cost of asphalt pavements, 1896..... 94,510.64

As you will see from this report, the city of Utica is taking large strides in the direction of becoming a well-paved city. Considering the sanitary questions, the avoidance of unreasonable noise, and such other questions as ought to be taken into consideration, I am of the opinion that asphalt pavements should be laid on all city streets upon which exist a moderate amount of traffic, and on which the grade does not exceed two and one-half per cent. If a theory of asphalt paving is to be adopted, the question naturally comes up as to which, if any, of the prominent asphalts in the market ought, in our municipal practice, to be given a preference. I have given some attention and study to this question, and I am free to say that, in my opinion, a good, substantial and durable pavement can be laid with either Trinidad Lake, Bermudez, or Alcatraz asphalts. I make this assertion with the full knowledge that instances can be cited where each of these asphalts have failed to realize the reasonable expectations of the parties paying for them, but I believe that such failures as can be proven are due to improper manipulation or improper workmanship.

C. L. JOHNSON, City Surveyor.

SPECIAL PAVING EDITION.

The April number of CITY GOVERNMENT will be especially devoted to street paving. It will contain descriptions and illustrations of many of the most beautifully improved streets in this country, the opinions of a number of city engineers on the various paving materials and their uses, and much statistical information.

patrolman on the force serves two weeks out of every four on the 11 P. M. relief, and one week out of every four on each the 7 A. M. and the 3 P. M. relief. Half of the



CAPTAIN CLEARY.

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patrolman only once in eight weeks, and he therefore puts in but 28 extra hours every eight weeks. The 28 extra hours are more than made good to the patrolman when, in every eight weeks, he is shifted from the 7 A. M. to the 11 P. M. relief; then he lays off from 3 P. M. on Saturday until 11 P. M. on Sunday, or for 32 hours. This shift from the 7 A. M. to the 11 P. M. relief occurs twice in eight weeks for every patrolman, but as half of the patrolmen on the 7 A. M. relief serve on the extra watch from 7 P. M. to 11 P. M., the 32-hour lay-off only comes once in eight weeks for each man.

Capt. Cleary has also devised a patrolman's time-table, which is an elaborate affair, showing the time for traversing every "beat" in the city. Trenton patrolmen are required to travel on a time schedule the same as railroad trains. The captain's time-table denotes the exact minute that a patrolman must leave a certain point on his "beat," the exact minute he must reach the end of the "beat," and the exact time at which he must make intermediate points. In this respect a check is kept upon the patrolmen by the sergeants and the patrol signal boxes, from which the men must report at stated intervals. If a patrolman is found "off time" by a sergeant or by a delay of his telegraphic report, it is presumed that something has happened and he is promptly looked up. This time-table idea is a very good thing to keep the patrolman constantly in the discharge of his duty and, furthermore, it enables the officers in command to locate every man on the force at any minute of the day or night.

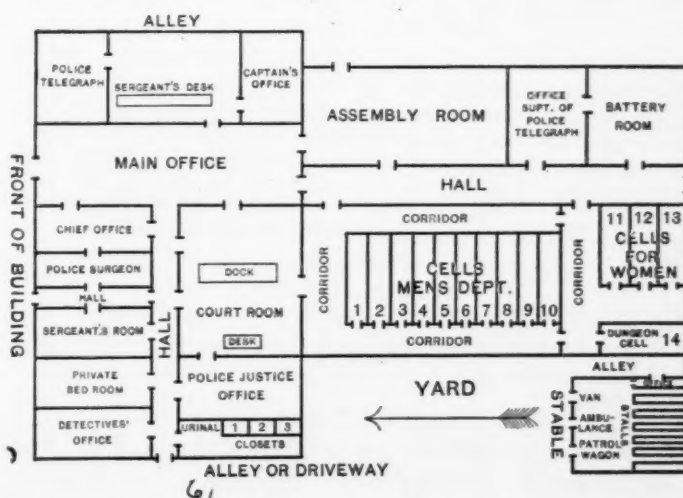
The police telegraph system, erected by Pierse & Jones, of New York, is complete and thorough in its operation. From a modest system of twelve street boxes, in 1885, the plant has been improved until it consists of two central offices, thirty-two street boxes and nineteen sets of telephones, with four metallic circuits consisting of thirty-three miles of hard drawn copper wire, weather-proof insulation. The power is furnished by an 88-cell storage battery, charged by the Trenton Light & Power Co. at a cost of \$1.87 per month. For 1896 the cost of maintaining the police telegraph system amounted to only \$920.

In the Trenton police department leave of absence on

account of sickness is granted only on the certificate of the police surgeon. In addition to answering all emergency calls for accidents and sickness on the streets, the police surgeon is required to attend all members of the force who are ill. William B. VanDuyn, the present efficient surgeon, has acted in that capacity since 1889.

When complaints are made against members of the force they are tried before the commissioners, and, if found guilty, fined or dismissed from the department, according to the character of the offence. The last annual report of the chief shows that nineteen complaints were made against members of the force during the year, and this is a very small number when it is considered that charges are lodged against policemen upon the slightest, and sometimes without any provocation. Of the nineteen cases, eight were dismissed; three officers were reprimanded, six were fined, one was suspended and one was discharged from the force. The charges embraced neglect of duty, absence from post, breach of discipline, tardiness, forcible arrest and violation of rules.

It costs about \$65,000 a year to maintain the Trenton police department. Of this sum, about \$58,700 goes for salaries. The chief receives \$1,200 per year; the captains, \$960 each; sergeants, \$900; roundsmen, \$840; patrolmen, \$780. Considering the size of the city and the general efficiency of the services rendered these salaries are certainly inadequate.



The first precinct police station, the ground plan of which is illustrated by the cut above, is a model. It is arranged primarily for the convenience of the business of the department and secondarily for the comfort of the members of the force. The main building is $86\frac{1}{2} \times 46\frac{1}{2}$ feet, and the rear extension, $81 \times 40\frac{1}{2}$ feet. The second story of the main building contains patrolmen's dormitory, bath rooms, drill room, gymnasium and the office of the police commission. The stable is equipped with a patrol wagon, an ambulance and a covered prison van, all of which are of the best.

—Dr. R. M. Eames has been elected health officer of Seattle, Wash., to succeed Dr. F. S. Palmer, resigned.

—C. A. Collier, the new mayor of Atlanta, Ga., is laying the foundation for an excellent official record. He has already suggested a great many improvements for the government of his city.

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Municipal news and information regarding changes of city officials will be greatly appreciated.

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NOTE AND COMMENT.

Mayor C. H. Hubbard, of Sacramento, Cal., does not believe in encouraging that very well-known brand of philanthropy which impels lighting and street car companies to invest large sums of money locally. He has ruthlessly vetoed a contract recently let to the Sacramento Gas, Electric and Railway Co. for lighting streets at \$135 per lamp, per year, on the grounds that the specifications under which the bids were received were so drawn as to prevent competition, that the price demanded of the city was higher than that asked of private consumers and that the price was excessive. The only argument advanced in the board of trustees for overriding the mayor's veto was that of Mr. Davis, who claimed that the company ought to be given the contract "because it had spent a large amount of money in Sacramento." It seems that

the Sacramento Gas, Electric and Railway Co., in the goodness of its heart of hearts, consents to use the streets of Sacramento for the operation of street cars and the maintenance of gas and electric lighting apparatus without charging the city any bonus whatever. Its only revenue must come from the citizens who use street cars and artificial light, and when it asks the city for a bonus in the way of fancy prices for street lights it then becomes the sad victim of a municipality's ingratitude. Mayor Hubbard ought to blush for shame—the idea of vetoing a pittance granted to a poor, struggling corporation which, we infer from Trustee Davis' argument, has spent a large sum of money for the mere indulgence of its unselfish spirit.

This Sacramento case serves, incidentally, as an example of the importance of CITY GOVERNMENT. When the mayor's veto message was presented at the meeting of the board of trustees the attorney of the interested corporation made a few remarks, in which he quoted rates charged for street lights in other cities to show that the price asked in Sacramento was not comparatively high. Some of the trustees, readers of CITY GOVERNMENT, were fortunately prepared to quote figures also, and their figures showed conclusively that the Sacramento price was really exorbitant. By having CITY GOVERNMENT on his reading table a city official can always get on the right side of an argument, when it concerns street lighting prices or any other question relative to municipal affairs. Keep posted.

Mayor Jones and the force of public opinion continue to keep the police department of Kansas City in a turmoil. It happens that the protection of the lives and property of the citizens of Kansas City is a sort of a long distance job, being entrusted to the tender mercies of the politicians at Jefferson City. Whether this condition of affairs is caused by the incompetence of the people of Kansas City to govern themselves or by the desire of the state politicians to make the city's police force subservient to their wishes is a question that will be readily answered in favor of home rule by any person of common sense. Mayor Jones, the newspapers and the best citizens of Kansas City have long insisted that the police force was giving protection to public gambling houses. Although the mayor is a member, ex-officio, of the police commission, he has been absolutely powerless to stop this corrupt practice, because he has been repeatedly voted down by the two members of the police commission appointed by the governor of the state. Mayor Jones, however, has a persevering way which is anything but pleasing to his enemies, and he is now in a fair way to come out victorious in his long fight for honesty and home rule. Both the house and the senate of the state legislature have appointed committees to investigate Kansas City's police department. The house committee evidently intended to "whitewash" the department, but since Mayor Jones has given them positive evidence of the existence of public gambling under the eyes of the police force the lime is not likely to mix well. Since the beginning of the legislative investigation the grand jury has returned

fifty-seven indictments against gamblers who have been enjoying the immunity extended by the majority of the police commission. From our point of view it looks as though there was public gambling in Kansas City, public sentiment was against it and the police were aware of it. Draw your own conclusions.

The claim of the police officials of Kansas City that they knew of no gambling houses in existence reminds us of the statement of "Bob" Smith, when he was mayor of St. Paul, to the effect that he was not aware of the existence of gaming places in that city. At the same time Mayor Smith made this statement, members of his police force were detailed to stand at the entrance of a certain gambling house not in "the syndicate," to intimidate men from entering it. CITY GOVERNMENT is not enlisted in the cause of moral reform, takes no sides on the public gambling question, but it abhors and condemns public officials who brazenly deny the truth.

Charles F. Haney, for eight years the popular city clerk of Minneapolis, has been indicted on a charge of offering Alderman Frank G. Drew a bribe of \$300 to vote and work for the granting of a certain asphalt paving contract. His trial has been set for February 26. Hr. Haney is now suffering intensely from rheumatism and heart trouble, and nearly all of his old companions have deserted him in the hour of his trouble. All who have ever met Mr. Haney will remember him as a whole-souled, cheerful, amiable gentleman, and we hope the serious charge entered against him may be proved to be without foundation.

Alderman Bennett, of Des Moines, has introduced in the council a resolution providing that contractors awarded public work shall give a bond secured by one of the surety companies having a capital of not less than \$500,000. In support of his resolution, Alderman Bennett urges that under the laws, as interpreted by the courts, it is impossible to enforce the payment of forfeited bonds with private sureties, not one of which has been collected in Des Moines for thirteen years. The execution of a bond, with private sureties, has become a mere form and really degenerated into a farce. On the other hand, Alderman Wilkins opposes the resolution on the ground that it would put the city to added expense, as the contractors would increase their bids enough to cover the amount of the premium demanded by the surety company. Further, he fears the operation of the resolution would be to create a close combination among a few wealthy contractors, who could in this way effectually exclude competition from those less favorably situated financially, and thus enjoy all the fruits of a complete monopoly.

Alderman Hugh McLean, of Holyoke, Mass., has proposed a municipal insurance department. In bringing the matter before the council, Mr. McLean stated that, despite the excellent work of the fire department, the insurance companies were charging very high premiums in Holyoke. He said the companies were taking something

like \$200,000 in premiums out of the city every year and returning only about \$45,000 for losses. The insurance business, therefore, strikes the alderman as possessing a very desirable profit, and he would make the city the beneficiary of it. He believes the fire department could be wholly supported by the profits of a municipal insurance bureau, and there would also accrue a very large reserve fund. The only objection to Mr. McLean's scheme is the possibility of a conflagration that would wipe out a good portion of the city and bankrupt the insurance department. Of course, this is a mere possibility, and perhaps the benefits to be derived from a municipal insurance department would be ample to justify taking such a chance.

Alderman Plotke, of Chicago, deserves to have his ill-sounding, but perhaps most honorable, name handed down to posterity. During the centuries to come, when poor man will have his vision of the ballet unobstructed, the very Honorable Mr. Plotke will be gratefully remembered as the originator of "the theatre hat ordinance." The ordinance which the alderman has had passed in Chicago, and which has been signed by Mayor Swift, provides:

No hat or bonnet shall be worn in any theatre in Chicago during the progress of any performance. Managers and owners of theatres are forbidden to permit any person to wear such hat or bonnet during a performance. The fine imposed for violation of the ordinance is not less than \$3 nor more than \$5. Persons violating the law are not to be arrested in the theatre during the performance, but may be ejected or arrested after the performance is over. Persons arrested may give the officer arresting them \$3, when they will be released from custody. The officer is to receipt for the money and deposit it in the nearest police court. At that court the accused must appear within three days for trial or the money will be forfeited. Persons refusing to give the officer the fine will be locked up. Owners and managers of theatres who fail to observe the law may be fined not more than \$25 and not less than \$10 for each offence.

Mr. Plotke, you are a peach; you ought to be imitated all over this country—and you probably will be.

The Boston council is considering the advisability of establishing a printing plant in connection with the city government. This is one of the best suggestions in the line of municipal retrenchment that has been made in late years. Any city that has any considerable amount of printing work could make a very appreciable saving by operating its own plant. Printers have always regarded cities, counties and states as their legitimate prey and some of the prices asked and received for printing public documents, books, etc., would give the ordinary business man a severe shock. An honestly administered printing plant would reduce the printing expense of any city from 50 to 75 per cent.—and that is no exaggeration.

The council of Brookville, Ind., has passed an ordinance making it a misdemeanor to smoke cigarettes on the street. Another ordinance imposes an annual license of \$150 on dealers in cigarettes. Of course, such ordinances are unconstitutional and illegal, but a long suffering public would appreciate their enforcement nevertheless.

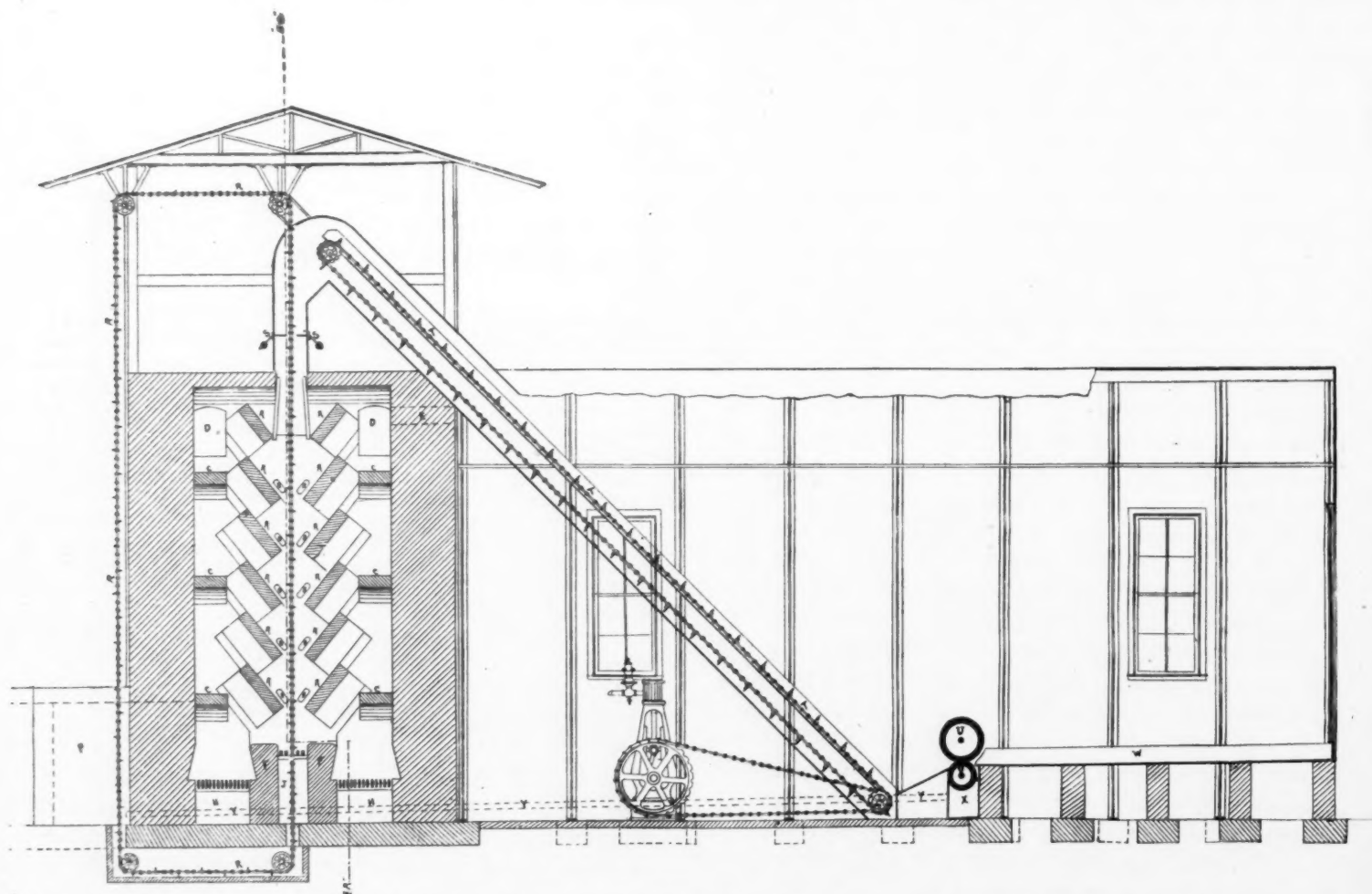
THE GARBAGE QUESTION.

II.—THE BURNS SYSTEM.

Only one garbage cremator of the Burns patent has been constructed for actual use, but the service demanded of this furnace was of such a nature as to give it a most severe test. A garbage cremator that successfully disposes of the garbage of Coney Island during a summer season is certainly worthy of attention. Coney Island garbage consists of every variety of animal, vegetable and sea food, kitchen refuse, broken dishes, glass, tin cans and old clothing, and it is extremely difficult to burn on account of the large percentage of moisture. Yet this

of any kind should arise from the garbage after it has been delivered to the receiving compartment."

Dr. Emery's objection applies only to the rude storage house erected at the Coney Island plant, and it has been entirely overcome by Mr. Burns, who has planned a properly constructed and ventilated receiving house. The cremator and improved receiving house, all under the same roof, is shown in the cut on this page. With the aid of Mr. Burns' patent garbage wagon, also illustrated, garbage can be hauled and disposed of by the Burns system without the slightest objection from a sanitary standpoint. The wagon is constructed of steel and it is as nearly air-tight as it is possible to make a vehicle of that



62 A—Arches or trays set at an angle of 50 degrees. B—Openings for cleaning arches. C—Flat deflecting arches. D—Flues from kiln to combustion chamber. E—Ventilating flue from garbage house to combustion chamber. F—Bridge wall between coal and combustion furnace. H—Coal furnace ash pit. J—Garbage furnace ash pit. P—Annex furnace for miscellaneous purposes and tin cans. R—Sprocket chain to keep garbage moving. S—Dumping device. T—Conveyor. U—Crushing rollers. W—Floor tank. X—Drip receiving tank. Y—Pipe to convey drip from floor and rollers to combustion chamber.

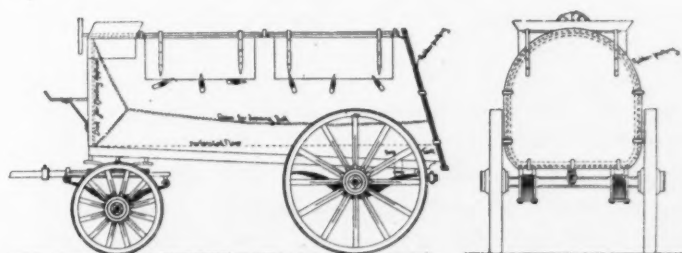
garbage was rapidly and economically destroyed by the Burns cremator during the last summer season. Coney Island is within the borders of the city of Brooklyn and the Burns cremator was operated by contractors under the supervision of the health department of that city. Health Commissioner Emery says:

"We have found the Burns cremator to be efficient in operation and entirely unobjectionable from a sanitary standpoint. The garbage is fed to the cremator by means of a flight conveyor, which requires the garbage to be stored temporarily and fed to the conveyor. This necessitates the erection of a small storage house near the cremator. This house was not properly constructed and ventilated; consequently odors were disseminated and complaints arose with regard to it. However, a proper receiving house can easily be constructed so that no nuisance

kind. In the front end of the interior of the wagon box is a disk, attached to which are chains running to the rear of the vehicle. When the wagon is backed up to the door of the receiving house these chains are utilized to draw out the disk and thus force the load of garbage onto the tank floor of the house. In this way the garbage is unloaded so quickly and so cleanly that it is impossible to fill the air with its objectionable odor. Once in the receiving house the garbage and its fumes are completely destroyed. The ventilation of the receiving house is arranged so that the fumes are carried to the upper portion of a large combustion chamber and there consumed. From the tank floor of the receiving room a large proportion of the water in the garbage runs into a drain which carries it to the lower part of the combustion chamber,

where it is quickly evaporated by the intense heat. The garbage is passed through heavy iron rollers to the flight conveyor, and in this way bulky substances are crushed and broken into small pieces, facilitating their ultimate cremation. The conveyor discharges the garbage into an automatic feed-hopper at the top of the furnace. It is thus fed into the furnace from the top and descends gradually between fire-brick trays or arches. In its descent, the garbage gives out its gases between the arches and is consumed by the flame from the coal furnaces below. As the garbage descends an endless chain, with projections, passes upward through it, keeping it agitated and thus driving out the moisture and causing it to burn more rapidly. By studying the cut and foot notes the reader will better understand the operation of the cremator.

As to the expense of operating the cremator, Mr. Burns is quite positive in stating that, with his method of



63 THE BURNS GARBAGE WAGON.

removing moisture and moving or stirring garbage while burning, his furnace will cremate more garbage to a ton of coal than any other. Owing to a lack of facilities for weighing the garbage no accurate records as to expense, per ton, were kept at the Coney Island plant. It was calculated, however, that the furnace consumed eighteen tons of garbage to one ton of coal. It requires the services of two men to operate the furnace. The machinery in a plant of fifty tons daily capacity can be run by five horse-power, generated from the regular furnace fire.

The Burns cremator, although rather intricate in construction, is built on scientific principles. It destroys garbage at a reasonable expense and without objectionable odors, and these two points will commend it strongly to city officials who are in the meshes of "the garbage question."

VARIOUS GARBAGE SYSTEMS.

Preparatory to establishing a new system for the collection and disposal of garbage, the city of Cleveland sent a special commission to several cities for the purpose of investigating the various systems in use. The report of the commission says:

BUFFALO, N. Y.

At Buffalo the Merz system of garbage disposal is in use. The city has an estimated population of 350,000. The garbage is collected daily in the central portion of the city and in the outlying portion twice a week. The collection is made under contract entered into July 31, 1896, at \$35,000 per year, the work being done under

the supervision of the bureau of streets. For disposition the city pays to the company owning and operating the plant \$35,000 per year, on a five-year contract, making a total cost for collection and disposition of \$70,000 per year.

The cost of the plant could not be obtained from the contractor. At present twenty-two men are employed at an average wage of \$1.35 per day. It requires eighteen tons of coal to dispose of 100 tons of garbage at this plant. The amount of grease extracted is about two per cent. of the total amount and the tankage or fertilizing base amounts to about 18 per cent. of the total bulk of garbage delivered. From the 21,000 tons of garbage delivered at the works during the year there was secured over 3,000 tons of tankage or fertilizer, which sold at \$4 per ton, amounting to \$14,400, and 400 tons of grease, at \$40 per ton, amounting to \$16,000, making a total of \$30,400 which the contractor received for residuals. The following summary will show the essential facts, relative to the operation of the plant:

Estimated residuals.....	\$30,400
Bonus paid by city.....	35,000
Total,	\$65,400

Estimated expense to contractor for operating plant
Approximate cost of plant, \$100,000.

Interest on investment, at six per cent.	\$ 6,000
Interest on life of plant, at ten per cent.	10,000
Labor	10,000
Fuel.....	4,500
Total,	\$30,500

Net proceeds to contractor, \$34,900.

Thus it will be seen that the Merz system at Buffalo is operated successfully, from a financial standpoint, for the contractor.

BRIDGEPORT, CONN.

At Bridgeport, with a population of 62,000, the Holt-haus system is in vogue. Collections are made of the entire city twice a week, under contract, the amount paid being \$2.74 per ton. In the neighborhood of twenty tons of garbage is delivered per day at the disposal works, making the cost of collection to the city, on a basis of 313 working days per year, \$17,152.40. For the disposal of garbage, when delivered, the city pays to the company 34 cents per ton. The cost to the city for disposition on the same basis as before, is accordingly \$2,128.40 per year. The total cost, therefore, to the city for the collection and disposition of garbage is \$19,280.80 per year.

The cost of the plant was \$70,000. It has a capacity of eighty tons per day of twenty-four hours. There are three men employed, one being the engineer, who receives \$100 per month, and two men who receive \$1.50 per day of twelve hours. It requires three tons of coal, at \$2 per ton, to dispose of twenty tons of garbage.

Interest on investment, at six per cent.	\$4,200
Interest on life of plant, at ten per cent.	7,000
Labor	2,139
Fuel.....	1,878
Total,	\$15,217

ESTIMATED RECEIPTS.

Tankage.....	\$5,256
Grease.....	5,840
Bonus paid by city.....	2,482
Total,	\$13,578

This plant is built for performing four times the amount of work which is being done at the present time.

The Holthaus system of garbage disposal is so planned that when the garbage is introduced into the receiving tank it is handled in a continuous manner. The garbage is first boiled in the receiving tank, after which all the moisture and grease is pressed out while it remains in the receiving tank, from which receptacle it is passed directly into the dryer, and from the dryer it passes by a system of conveying machines to the storeroom for shipment. The liquids, on the other hand, are taken from the first receiving tank by a system of pipe lines to a covered tank constructed especially for receiving this material. At this point the oil is separated or skimmed from the water and conducted into another smaller tank ready for shipment. The whole system of garbage disposal at the plant is conducted under a partial vacuum and in such a manner that from the time the garbage is introduced into the first receiving tank there is no exposure whatever of the material until it comes out in the form of finished products, such as fertilizing base and grease ready for shipment. The system gives entire satisfaction. The process of disposal absolutely sterilizes the garbage.

PHILADELPHIA, PA.

In this city a reduction plant, known as the Arnold system improved, is in operation, together with the crematory known as the Smith-Seimans furnace. Each of these disposal plants is operated by an independent company. The population is 1,188,793. The garbage is collected daily during the whole year, the work being performed by contract under the supervision of the director of public works. We were unable to ascertain the cost of collection and disposal, separately, either to the city or the contractor, as a contract has been made for the collection and disposal together. The city pays \$289,000 per year for collecting and disposing of its garbage, this amount being divided between the reduction plant and the crematory in proportion to the amount of work done. The Arnold system claims to dispose of about 250 tons of garbage a day and uses about twelve tons of coal, at \$1.80 per ton, in reducing this amount of garbage. The refuse, known as "tailings," from garbage is used in connection with the coal that is burned as fuel for the plant. They employ about twenty men in this work. We could not learn the amount of wages paid.

The Smith-Seimans furnace is owned and operated by an independent company and claims to dispose of about 100 tons of garbage per day. There did not seem to be much odor from the furnace incident to the cremation of garbage.

WASHINGTON, D. C.

At Washington the Brown system of cremation is in use. The estimated population is 265,000. From April 1 to November 1 daily collections are made; in the sub-

urbs tri-weekly collections are made. From November 1 to April 1 collections are made bi-weekly. From markets, hotels and similar places collections are made daily, including Sundays, throughout the year. A system of fines is in vogue in the city for non-collections. The garbage is collected by contract under the supervision of the department of health. The cost of collection in 1895 was \$2.85 per ton. During 1895 the disposal plant was burned, so that the total cost for disposition at the plant could not be given. During the past summer a Brown crematory was erected and has been in operation about three months. Under the new arrangement the city pays 28 cents per ton for disposal, about sixty tons per day being cremated. The cost of the cremation furnace was \$18,000, and was said to have been constructed at a loss of \$2,000 to the builder. Mr. Brown claims to be able to sell ash at \$4 per ton as fertilizing base. This crematory seems to be entirely satisfactory in its operation for the destruction of garbage and dead animals. No night soil whatever is disposed of at this crematory.

ATLANTA, GA.

Atlanta has in operation the Dixon crematory. The city has an estimated population of 100,000. The garbage is collected daily from the central portion of the city and from the outlying portion three times a week. Street sweepings and night soil are included with the garbage. The night soil of the entire city is collected once a week. All this work is performed under the sanitary department. The cost of collection could not be ascertained. About thirty-five tons of garbage and fifteen tons of night soil is collected daily. The Dixon crematory was constructed at a cost of \$18,000. It has a capacity of fifty tons. It requires four men to operate this plant; one man is paid \$2 per day and three men at \$1 per day each. It takes four tons of coal to run this furnace a day. The estimated cost of operating this plant is as follows:

Interest on investment, at six per cent.....	\$1,080
Interest on life of plant, at ten per cent.....	1,800
Labor.....	1,565
Fuel.....	2,504

Total expense, \$6,949

Receipts, nothing.

Cost, per ton, for disposal, 44 cents.

DAYTON, OHIO.

Dayton has just completed the construction of a Dixon crematory for the destruction of garbage, which the committee inspected and were very much pleased with its general mechanism and evident adaptability for garbage cremation. As the first load of garbage was placed in the furnace during the time the committee was making the inspection, we were unable to ascertain whether the plant was satisfactory to the city in its operations of disposal. The Dayton plant was constructed at a cost of \$27,000 and is estimated to have a capacity of eighty tons per day.

—City officials throughout the country continue to express their appreciation of "City Government."

SAN FRANCISCO'S NEW GARBAGE PLANT.

A Thackeray garbage crematory is to be erected at San Francisco. The building will have a frontage of 262 feet and a depth of 120 feet, and the chimney will be 250 feet high. There will be thirty-two furnaces, with a capacity to burn 400 tons of garbage per day. This will be the largest crematory in the world. Under the Thackeray system no odors whatever will emanate from the burning of the garbage, as the combustion and temperature of the furnaces is sufficient to overcome all such difficulties, and one other feature being especially adapted for this purpose, that is, the down draught with the powerful suction of the chimney causes all the odors, etc., to be drawn down into the furnaces and passed over the hottest place of the furnaces. The temperature, ranging from 1,500 to 2,000 degrees, is sufficient to consume and purify all and any odors that may arise. The garbage burns itself, no fuel whatever being required.

NEW YORK'S HEALTH REPORT.

The annual report of the board of health of New York City contains the following statistics:

	1896.	1895.	1894.
Total deaths.....	41,652	43,419	47,620
Death rate	21.54	23.10	26.63
Deaths under 1 year.....	10,683	11,220	12,243
Deaths under 5 years.....	16,856	18,100	19,870
Deaths at 65 and over	4,484	4,571	4,827
Deaths in institutions.....	10,826	10,306	10,973
Deaths in tenements.....	25,348	27,435	30,475
Total marriages.....	20,573	20,612	18,850
Total births.....	55,623	53,731	56,420
Total still births.....	3,542	3,372	3,857

The sanitary inspectors and police working in the department made 1,042,157 inspections and reinspections, 90,171 of which were by the division of contagious diseases and 12,276 by the division of pathology, bacteriology, and disinfection. As a result of the inspections by the sanitary police in 44,755 cases 204 orders were issued to reduce occupants in overcrowded buildings.

The most important work performed by the division of food inspection, offensive trades, and mercantile establishments, was in the inspection of cattle. During the year 72 herds, comprising 1,120 cows, were inspected, and 192 cows, to which the tuberculin test was applied were condemned and slaughtered.

The division of contagious diseases received reports of 29,909 cases, 11,093 of which were diphtheria, 5 small-pox, and 3 leprosy. There were 21,340 primary vaccinations and 61,481 revaccinations. The medical sanitary inspectors visited 79,389 cases, and inspected 64,059 tenement houses. The disinfecting corps fumigated 26,822 rooms, and removed 1,592 persons to hospitals on account of contagious diseases. The veterinarian examined 12,930 head of cattle and destroyed 245 glandered horses.

—The publishers are pleased to call the attention of the readers of "City Government" to a number of new advertisement this month—all of them from representative houses.

SALT LAKE CITY PAVEMENTS.

I submit the following statement regarding street pavements in Salt Lake City :

ASPHALT.

Year laid.	Square yards.	Asphalt.		Foundation.	Contract price.	Remarks.
		Kind.	Thickness.			
1891	2,346	Cal. asphaltic sandstone.	2.5 inches.	6 inches concrete	\$2.90	Including grading.
1891	1,100	Stradamantic asphalt.	2 inches.	4 in. concrete *	3.24	Including grading.
1892	14,989	Cal. asphaltic sandstone.	2.5 inches.	6 inches concrete	3.24	Including grading.
1892	2,871	Utah asphaltic limestone.	2 inches.	5 inches concrete	2.90	Including grading.
1893	23,886	Utah asphaltic limestone.	2.5 inches.	6 inches concrete	2.79	Including grading.
1893	15,100	Cal. asphaltic sandstone.	2.5 inches.	6 inches concrete	2.97	Including grading.
1896	3,652	Utah asphaltic sandstone.	2.5 inches.	6 inches concrete	2.74	Exclusive of grading.

* Asphaltic cement concrete.

STONE BLOCKS.

Year laid.	Square yards.	Kind.	Foundat'n.	Contract price.	Joints.	Remarks.
1892	8,274	Granite.	6-in. sand.	\$2.52	Sand.	Including grading.
1893	23,949	Sandstone.	6-in. sand.	3.12	Grouted with paving pitch.	Including grading.
1893	9,854	Sandstone.	6-in. sand.	3.15	Grouted with paving pitch.	Including grading.
1896	1,550	Sandstone.	6-in. pea gravel.	2.94	Grouted with paving pitch.	Exclusive of grading.

The pavements laid with asphaltic sandstone from Southern California have given the best satisfaction. Some of the pavement laid with this material has been in use for over five years, has cost very little for repairs and is now in a good condition.

The stone block pavement, laid with sandstone blocks from Park City, is in good condition with the exception that the surface is uneven, which is due to the blocks being laid on a sand foundation. The granite blocks used, from the Cottonwood quarries, are too soft and do not make a good pavement.

F. C. KELSEY, City Engineer.

ERIE PAVING WORK.

During the past year the city of Erie, Pa., has laid 1.56 miles of vitrified brick pavement, on 6-inch concrete base, width of roadway varying from 28 to 40 feet, a total of 33,340.5 square yards. Prices per square yard, complete, including foundation and curbing, \$1.68, \$1.72 and \$1.75. Former price, \$1.89 per square yard, complete, which was, however, for pavement laid on 12-inch gravel base instead of 6-inch concrete foundation. We laid, during the past season, 1.03 miles of sheet asphalt pavement on 6-inch concrete base; width of roadway, 30 feet; 18,341 square yards. Prices, per square yard, complete, including foundation and curbing, \$2.59, \$2.60 and \$2.65. Former price, per square yard, complete, \$2.75. All Trinidad Lake asphalt.

GEORGE PLATT, City Engineer.

—"City Government" is the only periodical devoted to all branches of municipal work.

FAVORS MUNICIPAL OWNERSHIP.

The superintendent of the police telegraph bureau of Brooklyn, F. C. Mason, in an interview in the Brooklyn Eagle, has this to say of municipal ownership of electric lighting plants:

"At the fifth annual meeting of the Northwestern Electrical Association, held in Milwaukee on January 20, central station electric light managers and electricians seemed to have lost their heads over a discussion of municipal ownership of electric lighting plants. There was some plain talk indulged in, and that many were troubled about the condition of affairs is evident, but the remedies suggested to correct the evils were few. The most prominent of these was a resolution which practically amounts to a boycott of manufacturers who sell supplies to equip and maintain municipal electric light plants. During the discussion the fact was brought out that in one instance a private plant furnishing light to a city and private consumers originally cost \$50,000 to construct. It was bonded for \$400,000 and stocked for \$200,000 and its notes were out for \$100,000. Is it a wonder that progressive men in city government in many of our larger and wide-awake communities are insisting upon municipal ownership of electric lighting plants? It is a fact that arc lights of alleged 2,000 candle-power can be furnished for 25 cents per night at a profit, if properly managed and figured from a first cost basis. All agree that it would be the height of folly for a city to depend upon a private corporation to furnish and maintain a fire-alarm or police patrol telegraph system, such as is now in use in this city. It is also conceded that such a system could not be run as economically or as reliably as it now is by the fire and police departments. I am convinced that many of the private plants erected in the past were the result of misinformation as to the true conditions involved, and that if the question were to be submitted to the voters at the present time a large majority would declare for municipal ownership in cities where private companies are now coining money from contracts, the companies in many instances being bonded and stocked for ten times their original cost.

"The hasty conclusions of the Northwestern Electrical Association are, first, 'that legislatures should grant no power to municipalities to erect and maintain lighting plants for general use, unless where franchises have been given the owners of the same shall have been remunerated,' and, second, 'that honorable manufacturers will not sell to municipalities until these steps have been taken, and central station men cannot afford to deal with manufacturers showing themselves thus dishonorable.'

"I claim that individual municipal plants have shown good results and will continue to show good results as long as they are properly managed. To my mind the proper and feasible way to counteract the present tendency is to inaugurate a campaign of education, to look up each case, and by the dissemination of authentic information as to actual cost, etc., place every voter in a position to form his own judgment in the matter."

It is with pleasure I commend the enterprise shown in the publication of CITY GOVERNMENT, and hope its success may be commensurate with its zeal. The problems to be solved in successful municipal government are of the greatest importance; anything looking toward that end should meet with the hearty approval and co operation of all.—Emory N. Yard, mayor of Trenton, N. J.

NOTES FROM ANNUAL REPORTS.

NOTE.—Chiefs of fire and police departments are invited to forward copies of their annual reports for review in these columns. We prefer reports before they are printed in pamphlet form.

FIRE DEPARTMENTS.

Nashville, Tenn.—E. M. Carell, chief of the fire department, reports that during the year the department answered 164 bell alarms and 55 silent alarms, making a total of alarms answered 219.

The losses on fires for the year amounted to \$220,056.65, with an insurance of \$744,756.65.

The manual force of the department consists of one chief engineer, one assistant chief, eleven captains, eleven lieutenants, six engineers of steamers, six stokers, twenty drivers, twenty-one pipemen and laddermen, one city fire alarm telegraph superintendent, one city electrician, one lineman, making a total of eighty men.

The apparatus of the department consists of the following: One extra first-class Ahren's steam fire engine, two second and one fourth-class Ahren's steam fire engines, three Halloway double tank chemical engines, seven four-wheel, two-horse hose carriages, three two-wheel one-horse hose carts, one aerial turn-table truck, two service trucks, two buggies, one each for chief and assistant chief, one wagon used as a supply wagon, also used by superintendent of fire alarm telegraph.

The department has at present 7,300 feet of first-class two and one-half inch rubber hose, 4,250 feet of second-class two and one-half inch rubber hose; 2,450 feet were purchased during 1896.

A suggestion is made that hereafter upon the appointment of new members to the force that their salaries be graded for the first six months at \$45, and for the second six months \$60, and thereafter to be paid the uniform salary paid all other members of the department.

Philadelphia, Pa.—Fire Chief Baxter reports that during 1896 there were 2702 fire alarms, which was 562 more than in 1895. The total fire loss was \$2,449,053, of which \$663,393 was on buildings and \$1,773,670 on contents. On this property the insurance aggregated \$19,924,681. Three firemen were killed and 193 injured, making one hurt out of every four employed.

The apparatus at present consists of 46 steam engines, 8 four-wheel hose carts, 16 two-wheel hose carts, 5 chemical engines, 23 combination hose wagon and chemical engines, 1 Babcock hook and ladder truck, 10 Hays hook and ladder trucks, 2 straight-frame trucks, 1 fire boat, 1 water tower, 4 Duval water towers for aerial trucks, 13 fuel wagons.

Reserve apparatus—Eight steam fire engines, 2 two-wheel hose carts, 6 four-wheeled hose carts and 1 Hayes hook and ladder truck.

The value of the chemical engines is said to be incalculable. They extinguished 508 fires during the year.

Charleston, S. C.—The report of Fire chief Marjenhoff shows that there were only eighty-one alarms during the year, but in every instance the firemen made quick time and worked industriously to save property.

During the year \$44,964.14 was received from the city treasurer to pay the running expenses of the department.

The total value of property on hand December 31, 1896, was \$128,023.50.

The following interesting figures are taken from the chief's report:

The quickest time for full companies to answer roll-call at alarms and fires in the day and night was: May 4, box 613, (day,) six minutes; April 4, box 512, (night,) four minutes.

The total amount of loss by fire in 1896 was \$36,320.45. The amount of insurance paid was \$34,099.95, leaving a loss over insurance of \$2,220.50.

The chief recommends that the enforcement of the building laws be placed in his hands. He says he sees the necessity of this at nearly every fire. Lumber is being deliberately put in and about fireplaces and chimneys in such manner that the most ignorant builder can see that it will ignite sooner or later, all of which is done contrary to city ordinances.

POLICE DEPARTMENTS.

Minneapolis, Minn.—V. M. Smith, superintendent of police, reports that for the year 1896 the expenses of the department amounted to \$225,809.22. The total estimated value of property belonging to the department is \$96,580. The total number of arrests made during the year was 5,426, and the total amount of fines collected was \$41,256.15. The total number of men in the department is 215 and a police matron. Of this number 131 are doing active service as patrolmen; 19 are detailed at police headquarters; 66 at the central station; 35 at the second precinct station; 39 at the third precinct station; 36 at the fourth precinct and 20 at the fifth precinct, with seven at the municipal court.

Supt. Smith recommends that the legislature be asked to pass an act making the vocation of a clairvoyant a crime. He calls clairvoyants "confidence people," and longs for something to enable him to suppress them. The superintendent also condemns the present methods of employment agents, and suggests that they should be regulated by the council and that a municipal employment bureau should be established.

Portland, Ore.—Chief of Police Robertson's report shows an interesting comparison of the expenses of the department for the last three years, as follows:

	1894.	1895.	1896.
Expenses of department . . .	\$102,179.36	\$84,420.38	\$71,110.59
Fines collected.	3,802.40	7,811.50	4,778.50
Net cost to taxpayers. . .	\$98,376.96	\$76,608.88	\$66,332.09

The total number of arrests for 1896 was 2,972; total value of property reported stolen, \$26,881.60; recovered, \$19,107.05. The police force consists of one chief, three captains, two clerks, five detectives, two electricians, one health officer, one humane officer, two jailers, two license officers, one matron, one stenographer, two drivers, four mounted officers and 50 patrolmen.

—Dr. H. E. Welsh, health officer of Youngstown, Ohio, has submitted his annual report, showing that the death rate for 1896 was only 11.3 per thousand.

NECESSITY OF WATER FILTRATION.

Of the multitude of responsibilities resting upon American municipalities that of furnishing a pure and wholesome water supply is probably the most important. If any mathematically inclined individual should ever compile and publish authentic statistics showing the number of deaths resulting from such water-borne diseases as typhoid fever, cholera, etc., in this country, it would most likely result in an emphatic public demand for the immediate purification of our contaminated municipal water supplies. Unfortunately, it is a habit of Americans never to fully realize a danger until some awful consequence forces attention to it. It is the indulgence of this habit that permits our citizens to neglect work essential to the preservation of the public health until they are overcome by some death-dealing epidemic. Human life is altogether too precious to be thus neglected, and it is to be hoped that the people of our cities are awakening to the fact that the filtration of contaminated water should be undertaken as a precaution against rather than as a cure for typhoid fever and like diseases.

Every city and nearly every town in this country has a system of water-works, and in most cases the plants are owned and successfully operated by the municipalities. The insurance companies have taken good care to see that these municipal water supplies are adequate for proper protection against fire, but the comparatively careless citizens have not always seen to it that the supplies are pure for the protection of human life. It would seem to any thoughtful person that the protection of human life should be the first thing considered in connection with public water supplies. Very few of our city water supplies are derived from sources which guarantee purity; in fact, most of them come from polluted streams and lakes. In too many cases the people are supplied with water from the dumping place of their sewage. Such a proceeding is mere folly, but it actually obtains in many of our cities.

Various schemes have been suggested to prevent the pollution of the sources of our water supplies, but the problem has never been successfully met. On the other hand, science and ingenuity have really furnished the means for purifying polluted water. It being conceded that our water supplies must necessarily be taken from sources more or less polluted, the only question remaining involves the purification of the water. Despite a general impression to the contrary, the purification of public water supplies is no longer a matter for mere experiment. The problem has been solved to the entire satisfaction of quite a few of our cities which are now being supplied with absolutely pure water by means of mechanical filtration.

In the case of water filtration, as in most other scientific matters, this country need not look to Europe for examples. American inventors have produced the filters best suited to the existing conditions in this country, where the artificial sand system of Europe is almost impracticable. The American mechanical filters possess so many advantages over the European system that it is not probable the latter will ever come into considerable use.

in this country. It is estimated that the average cost of sand bed filters of the European style, exclusive of land, is about \$70,000 per acre, and the filtering capacity of an acre is but 2,000,000 gallons per day. American mechanical filters, with a capacity of 2,000,000 gallons per day, can be put in for about \$20,000. The European system requires an acre of land for each 2,000,000 gallons daily capacity required, while mechanical filters with a total capacity of 2,000,000 gallons daily can be housed in a comparatively small space. The expense of maintenance and operation is smaller for the mechanical than for the artificial system, and, furthermore, mechanical filters are not subject to the climatic objections raised against the European sand beds.

The only artificial sand filtration plant of any note in this country is at Lawrence, Mass., while mechanical filtration systems are in successful operation in hundreds of our towns and cities. The best proof of the efficacy of mechanical filters is that furnished by the various towns and cities where they are in use.

The purpose of this article is to suggest the necessity for water filtration in many of our municipalities and to incidentally interest city officials in this most important of all subjects pertaining to city government. Future numbers of this journal will contain articles descriptive of some of the most important mechanical filtration plants.

THE MODERN FIREMAN AND HIS QUALIFICATIONS.

BY CAPT. H. G. WINSOR.

To give an idea of what is required of the fireman of today I will enumerate a few of the many things which he must constantly keep in mind. His regular duties; the condition of his apparatus, horses and equipments; the location of all the fire-alarm boxes and the quickest and best way to reach the same—this alone being no small task in a city where the streets are being continually torn up; what boxes his particular piece of apparatus responds to and what alarms. He must know all streets and avenues in his district and be able to reach any such streets by the shortest way with the least possible delay. He must understand the care and management of horses and be able to quickly and safely guide the same through crowded streets; he must know how to use the tools and the equipments of apparatus to which he is attached, and to keep in mind the exact location of each particular one, so that he can find it at once in the dark.

The fireman must be faithful, for upon each individual one rests great responsibility. Each has a certain work to do. There is nothing that will promote confidence so well as faithfulness, and a man who cannot or will not be faithful to his officers and to the interests of his department and city should have no place among firemen.

While it is not necessary for a man to be of gigantic proportion, still he must physically be able to withstand long exposure in all kinds of weather and often be subjected to a great amount of arduous and dangerous work in the discharge of his duties. I think now I have advanced sufficient reasons why the qualifications of modern

firemen should be as follows: Good moral character, temperate, considerate, honest, intelligent, faithful, progressive and physically able to perform any duty assigned him; and I have already said that I believe a large majority of our modern firemen possess many if not all of the requirements.

Do the majority of people appreciate this? I think not. They do not interest themselves enough in fire department matters to know what the requirements are. I will venture to say that there are many business men in any city today, men who have a large amount of property, who have never seen the inside of a fire department building; and still these same men will be the first to criticise and condemn the methods adopted by the department. It was not long ago that I was asked by a member of the city government if the firemen permanently employed were obliged to stay in the station at night. He did not know that the fireman must be on duty continually twenty-four hours each day, with only just time enough granted him to go to his meals; that he has to sacrifice all home comfort; and while the same man sits by his fireside on a cold, stormy night in winter, enjoying the evening with his family, the fireman is on duty at his station, ever watchful to protect his property from the ravages of the fire fiend.

I would impress upon every fireman in this country the necessity of study in his leisure hours. You know not how soon you may be called upon to accept a position of more responsibility than the one you hold today. When that time comes you should be prepared for it, and to prepare yourselves you should study.

Fire fighting is today a science, and the life of firemen a profession which requires the best mental and physical energy that a man is gifted with. Do not neglect an opportunity, however slight, to improve your knowledge of matters pertaining to your profession.

I am convinced, not from hearsay but from actual experience, that a military training is of great benefit to every fireman who has had the good fortune to receive it; and to the young men in the fire service today who have an opportunity to obtain such training I say, do not hesitate, for it matters not what your position in the service may be, it will help you more than you can imagine. If you are a hoseman or a ladderman it will teach you what an order or command means, what discipline means and how to show proper respect to your officers. If you are an officer it will show you how to command men and how to enforce discipline.

TOPEKA'S CHEAP ELECTRIC LIGHTS.

William H. Barnes, city engineer of Topeka, Kas., writes that electric street lights now cost his city only \$41.20 per lamp, per year. Topeka operates its own electric plant, and the estimate of \$41.20 per lamp does not take into account interest and depreciation, but includes all expenses for maintenance and repairs. During the past year the city spent \$15,000 in replacing old electrical apparatus with that of the latest design. The plant originally cost \$55,447. There are 257 arc lights of 2,000 candle-power each.

TAXES AND FINANCE.

—Cleveland, Ohio, river and harbor four per cent. bonds, amounting to \$250,000, were sold recently to Estabrook Bros., of Boston, for \$270,759.

—City of Baltimore $3\frac{1}{2}$ per cent. funding bonds, to the amount of \$1,453,300, were sold on February 1 to the Third National Bank of Baltimore at 105.77, the highest figure ever paid for the securities of that city.

—Mayor Quincy has submitted to the Boston board of aldermen the annual estimates, amounting in the aggregate to \$15,329,646. The principal items are: City debt requirements, \$3,139,822; schools, \$2,315,000; police, \$1,650,000; fire, \$1,175,000; lamps, \$620,000; hospitals, \$547,700; paving, \$660,000; sanitary, \$460,000; sewers, \$300,000; street cleaning, \$310,000; library, \$235,000.

—The annual report of Comptroller McCardy, of St. Paul, shows the net indebtedness of that city to be \$9,013,700, of which \$2,460,000 is water debt and \$1,055,000 tax levy certificates. St. Paul has not issued any bonds since 1892. The estimated value of the city's real estate and buildings, including water-works, is \$9,232,115. In addition to this the city has \$1,290,000 invested in bridges and \$1,509,100 in sewers.

FIRE AND POLICE.

—A. S. Leslie has been elected chief of the fire department of Cheyenne, Wyo., to succeed F. A. Roedell.

—It cost \$84,894.33 to run the Syracuse, N. Y., police department last year. About 75,000 of the total amount was for salaries.

—The total disbursements for the St. Paul fire department for 1896 amounted to \$184,050, of which \$159,045 was for salaries.

—In the Greater New York charter, Chief Bonner thinks the salaries of firemen should be graded from \$1,000 up. The chief recommends \$1,000 for the first year's service and an increase of \$100 a year until the salary amounts to \$1,400.

—The council of Dover, N. J., recently passed an ordinance for the regulation of the volunteer fire department. The ordinance is very thorough, and if its provisions are carried out Dover will be assured of first-class fire protection.

—The report of the Albany, N. Y., fire department for the year ending October 31, 1896, has been submitted to the council. The total expenditures amounted to \$119,603, of which \$91,931 was for salaries, \$2,071 for fire alarms, and \$5,179 for new apparatus and repairs.

—The annual meeting of the Illinois Firemen's Association was held at East St. Louis in January. The following officers were elected: President, M. J. Myers, of Mt. Pulaski; secretary, E. W. Barkman, of Pana; treasurer, C. F. Buck, of Monmouth; statistician, B. F. Staymates, of Clinton.

—The annual report of Chief Barrett, of the Indianapolis fire department, shows that there were 571 alarms during the year; total losses, \$337,954; insurance, \$1,340,060. There are 145 men in the department. There are eight engines, three hook and ladder trucks, one aerial truck, one water tower, eighteen wagons, one four-wheel reel, eighty-two horses, 22,650 feet of good and 2,000 feet of second-rate hose, 166 cisterns containing from 700 to 2,000 barrels each, and 182 fire-alarm signal boxes.

—Chief of Police Badenoch, of Chicago, says: "I am delighted with the workings of the civil service law in the police department. It has accomplished much for

this department even in the short time it has been in operation. In the first place, the selection of the men through civil service examinations saves the head of the department an enormous amount of time. Before the civil service law went into effect much of the time of the head of the department was taken up by listening to applicants and the friends of applicants wanting places on the force. The examinations of the civil service commission have given me first-class men as to fitness, physical condition and merit. One rule that helps amazingly is that an officer discharged for cause cannot be reinstated, no matter who is behind him. The men now realize that an infraction of the rules of the department means that they will be discharged, and that when discharged they cannot get back. The merit system is also a good factor in helping to maintain discipline. Every officer now feels that his chances for promotion depend upon his own efforts, and he knows that political 'pull' no longer cuts any figure."

LIGHT AND WATER.

—The streets of Columbus, Ga., are illuminated by 115 arc lights, all night schedule, at \$85 per lamp per year.

—Mayor Pingree claims that Detroit is saving about \$80,000 a year by operating its own electric lighting plant.

—The receipts of the city gas works of Wheeling, W. Va., for the year 1896 amounted to \$100,519, and the expenditures were \$76,520.

—Bids for lighting the streets and public buildings of Buffalo were remarkably similar, all three gaslight companies offering gas at \$1 per thousand for one-year contract, 90 cents for three years, or 80 cents for five years. The only bid for lighting by electricity was 35 cents per night for 2,000-c. p. lamp for one year, 33 cents for three years, or 30 cents for five years.

—John Caulfield has been re-elected secretary of the St. Paul water-works, despite the fact that certain political influence was brought to bear against him. Mr. Caulfield has been connected with the St. Paul water department for a great many years and he knows every inch of the business. It would be nothing short of an outrage upon the public to oust such an experienced and efficient official for political reasons. Mr. Caulfield has been too busy attending to the work of the water department during the last ten or fifteen years to have anything to do with politics, and most of the citizens of St. Paul neither know nor care whether he is a republican or a democrat—or even a populist.

—H. C. Hoagland, superintendent of the municipal lighting plant at Kalamazoo, Mich., informs us that the plant is a great success. During the eight months ending December 1, 1896, the cost of operating the plant amounted to \$6,604.34, and for the preceding eight months, when the city was lighted under contract, the cost was \$9,186.78. Under the contract system 149 lights were furnished, of which only 29 burned all night; and the average number of lights furnished by the municipal plant was 195, all of which burned all night. So the city saved, in eight months, the sum of \$2,582.44 and secured a much better lighting service at the same time. The first year of the Kalamazoo plant will end on April 1, and Superintendent Hoagland says he will then be able to show that an average of 197 all-night lamps were furnished and the cost, including four per cent. interest on bonds and five per cent. for depreciation, was no more than the city formerly paid for 149 lamps with only 29 of them burning all night.

TRADE NOTES.

—Larchmont, N. Y., has purchased a Gleason & Bailey hose wagon.

—Staten Island, N. Y., will have another Gleason & Bailey hose and patrol wagon.

—The fire department of Grass Valley, Cal., has adopted the Gamewell fire-alarm system.

—Gleason & Bailey have received an order for a new truck from the Buffalo fire department.

—The Buffalo fire commissioners have just ordered a new first-class truck from the La France Fire Engine Co., of Elmira, N. Y.

—The Morrison-Jewell Filtration Co. has just completed a \$100,000 filter plant for the Elmira, N. Y., water-works. The plant works perfectly and the citizens of Elmira are now supplied with absolutely pure water.

—Mr. E. Ward Wilkins, of Partrick & Carter Company, of Philadelphia, is about to make a trip to the Southwest and Pacific coast, combining business with pleasure. Mr. Wilkins represents one of the oldest firms in the electrical trade in this country.

—A public test of a number of smoke protectors was made in Scranton, Pa., last month, and the chief of the fire department, P. J. Hickey, informs us that two of his men and himself remained in a dense smoke sixteen and a quarter minutes protected with the Miller apparatus and came out in excellent condition, and could have gone through the same experience again without removing the apparatus.

—The board of naval officials, appointed by Secretary Hilary A. Herbert, of the United States Navy, to investigate the merits of the Vajen-Bader patent smoke protector, after a most thorough and severe test, have sent in a favorable report to F. E. Chadwick, chief of the Bureau of Equipment, Department of the Navy.

—Mr. Charles Hvass has accomplished as much as any other man in this country in solving the problems that have arisen in connection with the cleaning of streets. It is the inventive mind of this gentleman that has greatly assisted street cleaning departments and contractors to give satisfactory service. Street cleaning machines, to meet all the requirements, must be designed with several very important points in view: they must be strong and simple in construction; they must be easily adjustable to the uneven surfaces of roadways; they must have bearings thoroughly protected from dust and dirt; they must lighten the wear and tear on brooms, and they must take up every particle of dirt on the road. Mr. Hvass has invented machines which meet all of these requirements. His two-horse sweeper is a model of simplicity and strength, being constructed entirely of wrought iron and steel. It is easy upon horses on account of its having but few frictional parts. It is claimed that the saving in wear alone of the brooms used in these machines will in less than one year more than actually pay for the cost of the machines themselves. One of these brooms will sweep 800 running miles. They do not throw any dirt upon the sidewalks or upon the working parts of the machine itself, as they are amply protected by self-acting fenders. Every broom used in these machines will wear parallel until it is completely worn out, the reason for this being that the machines are so constructed that they allow the broom to be hung from the centre on two arms of equal length, so well braced together that they form a perfect frame. Besides every piece of machinery and every broom hanger is so made that they hang flush with the driving wheels. The smaller machines made by Mr. Hvass have all the good qualities possessed by his two-horse sweeper. The

machines are highly indorsed by the officials of many cities where they are now in use. Mr. Hvass is the sole manufacturer of all his inventions, at 509 and 511 East Eighteenth street, New York City.

—The contract for the new power station to be erected for the New York, New Haven and Hartford Railroad Company, at Berlin, Conn., has been let to the Berlin Iron Bridge Company, of East Berlin, Conn. This building is 110 feet in width and nearly 200 feet in length, divided into two equal portions, one side to be used for a boiler room and the other for an engine and dynamo room. The engine and dynamo room is provided with a runway and 35-ton travelling crane. The whole framework is to be of steel, the side columns being enclosed in by brick walls. When finished this will be one of the most complete, expensive and best central stations in the world, as no pains or expense have been spared to make it a model.

THE JEWELL WATER FILTER.

City officials interested in the purification of public water supplies should certainly investigate the merits of the Jewell water filters, made by the O. H. Jewell Filter Company, of Chicago, and the Morison-Jewell Filtration Company, of New York, Philadelphia and Camden. The Jewell filter and auxiliary appliances are the result of over twenty years' experience and practical work in the purification of waters, and are now in successful use in many public water plants, as well as in hundreds of factories, buildings, clubs, hotels and residences. All of the municipalities which have adopted the Jewell filter furnish testimony of its perfection of mechanical construction, its simplicity and economy of operation and its absolute efficacy in the purification of water. The manufacturers of the Jewell filter have just issued a new pamphlet of 120 pages which contains a great deal of useful and interesting matter pertaining to the subject of water filtration, besides beautifully illustrated descriptions of many of the Jewell filter plants already established throughout this country.

SCHOOL BOYS AS FIREMEN.

A novel and interesting feature of the Cambridge, Mass., Manual Training School for Boys is the fire battalion. In conduct and appliances this is nothing less than a reproduction of the real fire organization under the civic government, and it gives the youngster fortunate enough to secure its advantages a practical knowledge and training in the whole science of fighting fire. The drill was first introduced as an optional feature in the school, but its success was so pronounced and the benefit so unquestionable that it has been made compulsory upon all boys physically able to take it.

The compulsion involves no hardship, however, for the dullest boy cannot help finding the exercises interesting. Before he can enter the battalion proper a semi-military course is given him, consisting of the simpler marching movements, setting up exercise and other forms of training identical with those used in the school of the soldier. The course also includes emergency lectures by competent surgeons.

Lectures are also given to assist the boy in familiarizing himself with the various appliances of the fireman business. He then learns the use of the ladder trucks, with all the different ladders—straight ladders, extension ladders, roof ladders—handling the ladder dogs, the life-line gun, jumping nets, life belts, life harness, and all the other appurtenances.

A hand engine, fully equipped for work, and a hose carriage furnished with all the necessary nozzles and couplings, a hydrant gate, gooseneck, reducers and automatic shut-offs are also provided.

THE WINKLER STREET SPRINKLER.

Simplicity of construction, durability, ease of operation and perfection of water distribution are the essential points to a satisfactory street sprinkler. These qualities are admirably combined in the latest improved sprinkler manufactured by Winkler Bros., of South Bend, Ind., and illustrated on this page. This sprinkler is easily op-



WINKLER STREET SPRINKLER.

erated by the driver, from his seat on the wagon, so as to throw any quantity of water desired. The spray can be minimized so that it is practicable to sweep the street by machine immediately after it is sprinkled. A sprinkler that can be operated in this way, reducing the flow of water to the minimum, is really the only apparatus to give satisfactory service on asphalt streets. The mechanism of the Winkler sprinkler permits the driver to regulate the flow of water and by a simple touch he can throw a minimum spray or actually flood or flush the street. An important point about this sprinkler is a device by which the driver can throw out the valves in the rear, allowing all dirt or foreign matter that may be in the water to instantly wash out, thereby insuring at all times a full and perfect spray. The Winkler sprinkling wagons are built of the best materials throughout. The manufacturers have sufficient faith in their work to send a wagon to any part of the United States, on trial, at their own expense.

THE EDSON STREET SWEEPER.

The broom sweeper illustrated on this page is made by the Edson Manufacturing Co., 132 Commercial street,

Boston, and is the result of the thirty-five years of experience which this concern has had in this line. This machine has a revolving broom hung diagonally by a hinge bar to the frame. The broom is controlled by a balance lever bar and can be operated by hand or foot. The following excellent points are claimed for the machine: Adjustable and reversible balance to give the required pressure to broom; self-adjusting spring pawls connect the wheels with driving shaft; simple contrivance for disconnecting the rotating of broom; finished steel journals with dust-proof boxes; patented truss with short, stiff frame and cut-under front, making a compact, convenient and durable machine. The machine sweeps six feet, eight inches.

These sweepers are in use in many of the principal cities of the United States, among which are Boston, Salem, Newton and Watertown, Mass.;

Washington, D.C.; Chicago, Ill.; Cincinnati, Cleveland, Columbus, Dayton and Zanesville, Ohio; Portland, Bath, Biddeford and Waterville, Me.; Manchester, N. H.; New York City, Brooklyn, Rochester, Buffalo and Syracuse, N.Y., and others.

TO SWELL MILWAUKEE TAX RECEIPTS.

A bill has been introduced in the Wisconsin legislature providing for the taxation of street railways. The bill requires the street railway companies to annually submit to the assessors a sworn statement showing a detailed description of all real estate, the number of cars and miles of track owned and used by them; a penalty of \$1,000 fine or six months imprisonment or both is provided for

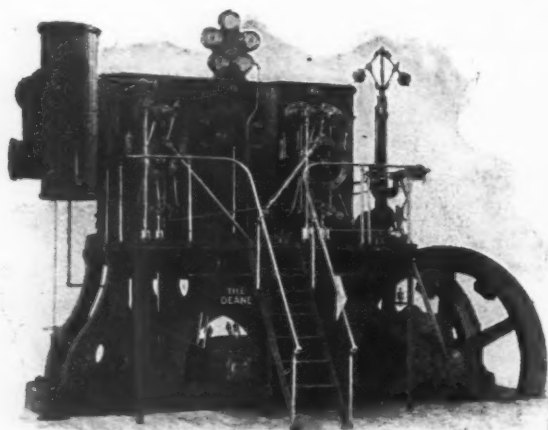


EDSON STREET SWEEPER.

in case of failure to furnish this sworn statement. The assessors will assess the property so returned and levy the same tax upon it as is levied on other property, and they are given power to foreclose in case the tax is not paid. Nothing in the new act shall be construed to exempt street railway property from the payment of special assessments or of license fees upon cars.

THE ANDOVER PUMPING ENGINE.

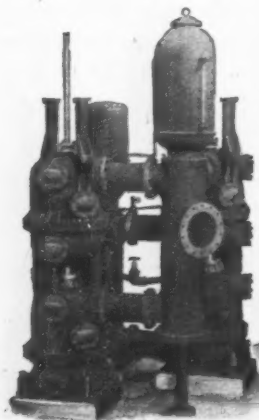
One of the most complete and economical pumping engines ever constructed has been built at the Andover, Mass., water-works by the Deane Steam Pump Company, of Holyoke. John E. Smith, superintendent of the Andover water-works, describes the engine as follows:



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The engine is a vertical compound condensing fly-wheel engine, with automatic cut-off on the high pressure cylinder, and either automatic or variable cut-off on the low pressure cylinder. Between the cylinders is a receiver having a coil of pipe through which live steam from the main steam pipe is constantly circulating, insuring dry steam in the low pressure cylinder.

The steam cylinders are jacketed, both heads and barrels. The steam and exhaust valves, which are of the Corliss type, are carried in the heads, reducing the clearance spaces to a minimum. The valve gear is driven from one crank pin on the main shaft, and so arranged that one motion of the starting bar moves all of the valves of both cylinders. The piston rods are connected through cross-head on to each end of a working lever, which transmits the motion through the main connecting rod to a bent crank in the main shaft.

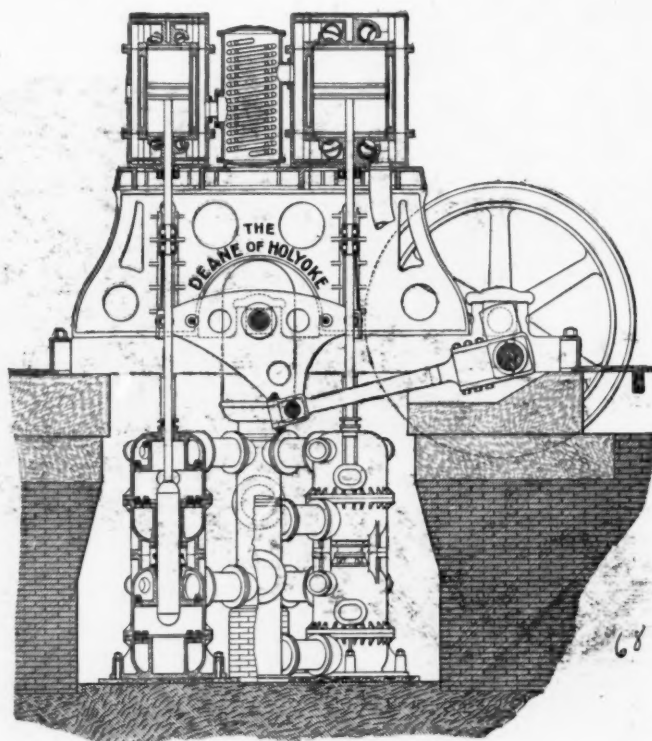


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The pumps, two in number, are vertical double-acting plunger pumps with centre packing. The packing ring, which is of composition, can be readily taken out and replaced without disturbing the pump cylinder. The pumps are placed in a pit below the engine, with the axes of the pumps in line with the axes of the steam cylinder, the plunger rods connecting directly with the cross-heads of the engine, thus forming a continuous direct line through both steam cylinders and pumps. The air pump is an independent, horizontal, single piston, double-acting pump having steam cylinder five and one-half inches in diameter, water cylinder eight inches in diameter and seven-inch stroke.

The feed pump, which was furnished by the contractors though not called for by the specifications, is a small,

duplex piston pump of the regular Deane pattern attached to a receiver, by which it is automatically governed. The action of the steam is as follows: The steam is first admitted to the high pressure cylinder, the admission being automatically cut off by a fly-ball governor. After doing work in the high pressure cylinder



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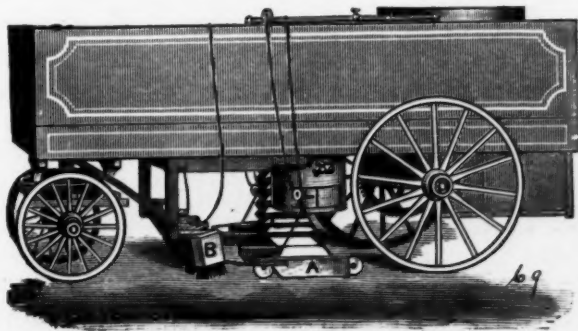
it is exhausted to the receiver which has been described. From the receiver it is admitted to the low pressure cylinder, the point of cut-off being governed either by the fly-ball governor or by hand adjustment; from the low pressure cylinder it is exhausted through a coil feed-water heater to a jet condenser which is placed on top of the air pump. The air pump then discharges it, together with the water used for condensation, through the overflow. The steam which is used by the air pump may be taken either directly from the main steam pipe or from a separator placed below the jackets and receiving the jacket drainage. The exhaust from the air pump goes either to the feed-water heater or to the receiver of the main engine. The valves of the pumps all open upwards, and the water being displaced by the plungers passes upward through the valves to a large water chamber from which the discharge main leads.

A PNEUMATIC STREET SWEEPER.

City officials who are wrestling with the street cleaning problem, especially those who have asphalt streets to deal with, will be interested in the Furnas pneumatic street sweeper, which has been successfully introduced at Indianapolis. This machine cleans the street with air blast, makes no dust and does away with sprinkling. The cut gives a general idea of the sweeper. At A is seen the pick-up hood. At B the brushes or scratchers. The brushes merely drag on the street, and their only office is to loosen dirt and droppings. The machine is drawn by horses, and a five-horse power steam engine runs the ex-

haust fan. A strong air blast is drawn over the surface to be swept, which carries the dust and dirt to the dirt box. The exhaust steam from the engine passes into an expanding cylinder holding about five cubic feet, where it expands. From this cylinder the steam passes into the dirt box. The current of dust-laden air is met, as it enters the dirt box, by the exhaust steam. The dust is dampened by the steam and deposited in the dirt box.

The air, after the dirt is de-posited, passes from the dirt box into the exhaust fan. From the exhaust fan a



part of the air passes through the furnace of the boiler, making the draft for the fire. The remainder of the air current is returned to the pick-up hood, to be used over again. Thus it will be seen that air once taken into the current can only escape through the boiler fire. Thus any dust which is not deposited in the dirt box will either pass into the fire and be destroyed, or be returned again through

the pick-up hood to the dirt box, and be again treated to steam. The pick-up hood, by the use of flexible aprons, fits closely to the street. Enough of new air must continually be drawn into the pick-up hood, where it comes in contact with the street, to replace the amount which is continually passing out through the fire. Hence there is neither dust nor steam. The machine makes so little noise, and looks so much like a large, covered delivery wagon, that no valid reason exists why it may not be used in day-time.

—At the annual meeting of the Illinois Society of Engineers and Surveyors, held at Springfield, the last week in January, a number of very interesting papers were read. Officers for the ensuing year were elected as follows: President, Charles C. Stowell, Rockford; vice-president, E. J. Chamberlin, Pittsfield; recording secretary, P. C. Knight, Pontiac; executive secretary and treasurer, Jacob A. Harman, Peoria; trustees, A. Lagron, Freeport; Charles Rickard, Springfield; W. D. Pence, Champaign.

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I enclose herewith my check for \$3.00 to pay my subscription for year ending December, 1897. Judging from what I have already read in the December number and the January number just received, your paper will prove to be worth many times what it cost me. I certainly congratulate you upon the admirable paper you are giving your subscribers, and believe you are performing a great service in the aid of a better municipal government. How can it better be secured than by aiding the officials of various departments to become better informed as to what is transpiring throughout the country.—Homer J. Stratton, Board of Aldermen, Holyoke, Mass.

CITY GOVERNMENT, an interesting monthly magazine, published at 150 Nassau street, this city, and devoted to the various branches of municipal government, is receiving many testimonials from city officials throughout the country. It is well edited and treats in a clear and interesting manner the questions it discusses. As the problem of municipal management is in many respects a huge business proposition, CITY GOVERNMENT has a wide field for usefulness in the matters upon which it treats.—Electrical World.

Allow me to congratulate you upon the success of your journal. There is a growing need for standard information upon municipal subjects. We need more business men who will keep up to date on the business phases of public questions. CITY GOVERNMENT is helping greatly to supply these needs.—W. D. Wood, Mayor, Seattle, Wash.

CITY GOVERNMENT is the title of a new monthly publication, of handsome typographical appearance, devoted to the practical affairs of municipalities. It covers a new field, and has received the indorsement of many prominent city officials. The paper is published by the City Government Publishing Company, 150 Nassau street, New York City. Mr. Clarence E. Stump, formerly well known in electrical journalism, is the president and treasurer of the company.—Electrical Review.

I am much pleased with the copy of CITY GOVERNMENT sent me and herewith hand you check for \$3 in payment of subscription for 1897. The paper contains much valuable information for all classes of city officials, and can certainly be read with profit by all engaged in the fire and police telegraph and municipal wire-inspection departments throughout the country.—F. C. Mason, Supt. Police Telegraph, Brooklyn.

CITY GOVERNMENT will be of immense value to municipal officials if it excites discussion that will lead to the betterment of the government of our cities. From the copy sent me I think you are pursuing the proper course to bring about this result.—John A. Caldwell, Mayor, Cincinnati.

THE CITY GOVERNMENT is a monthly magazine for city officials, taxpayers and others interested in municipal affairs. It is a wide-awake, well-conducted magazine, published at No. 150 Nassau street, New York, with Chicago and Boston offices. \$3.00 per annum.—Albany Argus.

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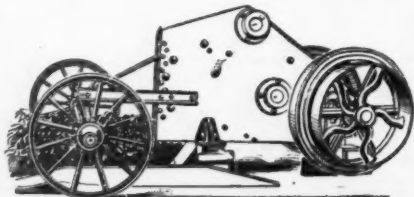


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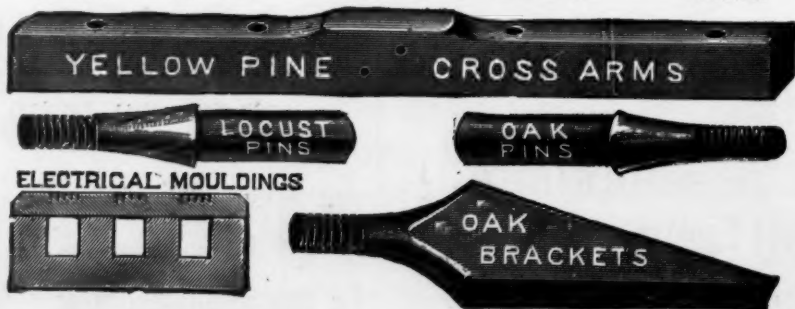
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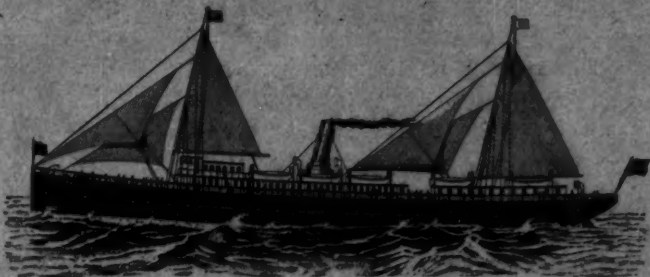
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